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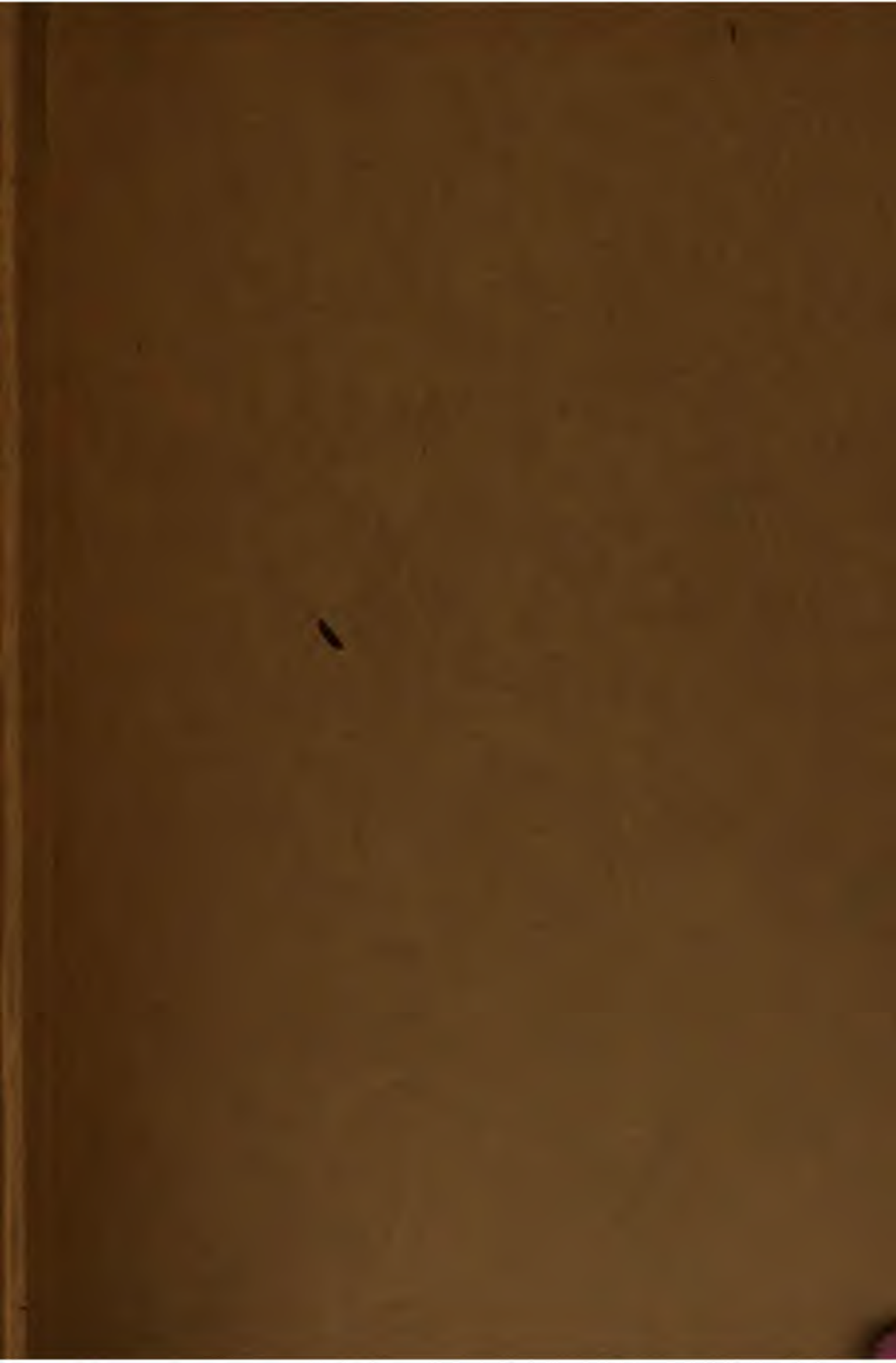
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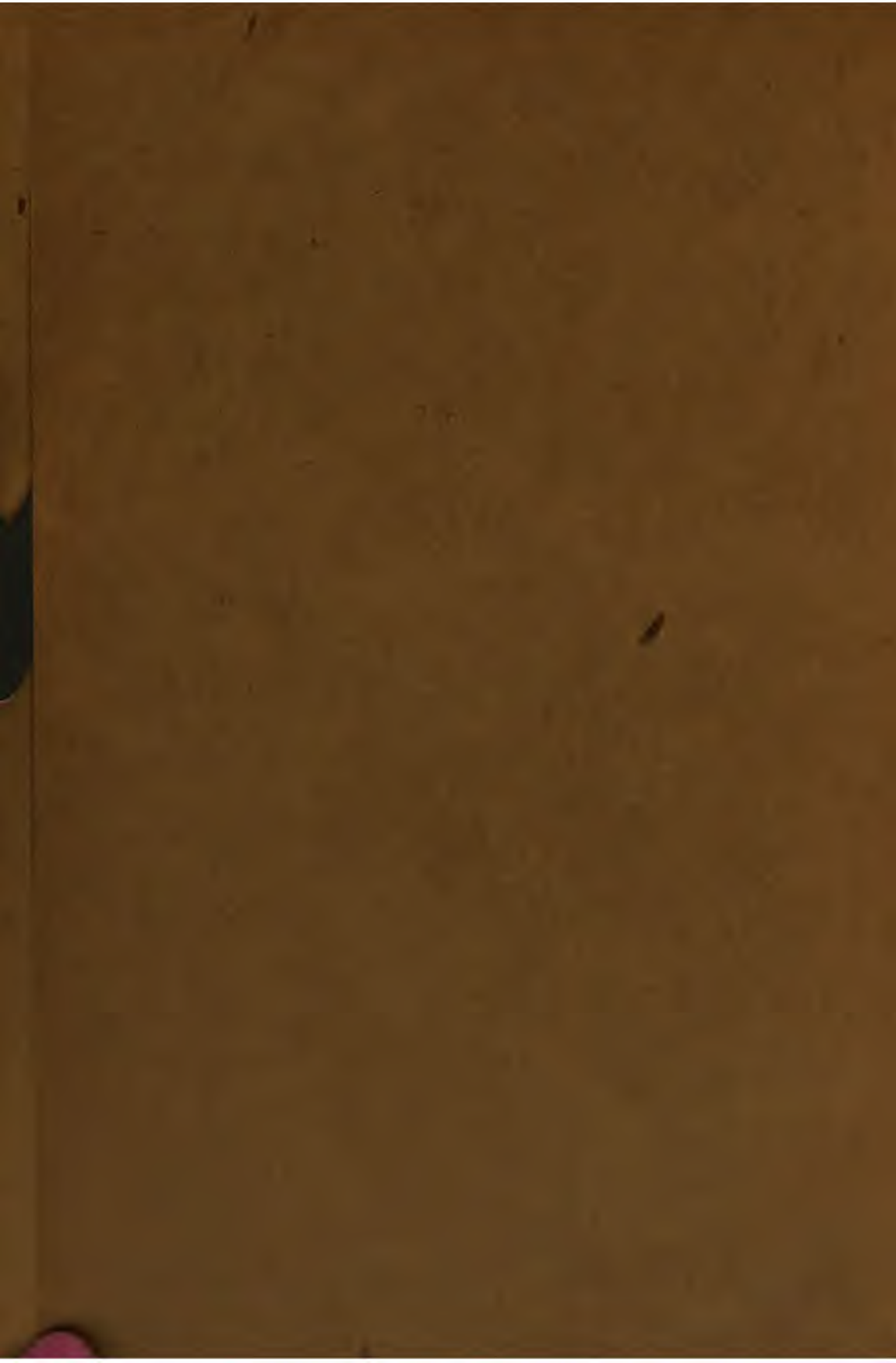
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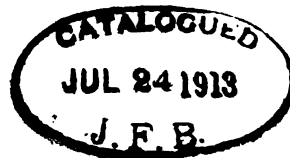
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EDITORIAL

WE MAKE OUR BOW.

In the past ten years to our certain knowledge no less than three attempts have been made to start and maintain a journal devoted solely to physical therapy. Each of these attempts failed for reasons which we will not take the time to dissect.

This field is just as great, and, we are confident, is even far greater today than ever before. There is a need for a journal through which the busy doctor, whether in private or institutional practice, may come in touch with the progress along these special lines of therapy. To supply this need we are entering the field under the banner of "THE AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS"—for short, just "PHYSIOLOGIC THERAPEUTICS."

We do this realizing full well the responsibility which we have voluntarily taken upon our shoulders, knowing the fate of our predecessors and in spite of the whispered advice of some of our well-meaning but pessimistic friends. We have a definite mission and it shall be our endeavor to fulfill it to the best of our ability, with the co-operation of those progressive gentlemen who have kindly become co-editors of this journal and the assistance of our readers.

We believe that there is a need for a practical journal to cover thoroughly the ever-broadening field of physiologic therapeutics, and to bring together in as brief and assimilable form as possible the essentials of the progress made in these particular lines. In supplying this need it is hoped that the influence of PHYSIOLOGIC THERAPEUTICS may serve to stimulate the profession to a deeper realization of the vast possibilities of non-drug medication. Not, mind you, that we do not believe in drugs—far from it. On the contrary, our confidence in this branch of medicine remains unshaken. Dependable, accurate and positive medication—the right remedy given to effect—will always retain its proper place. The essentials of success hidden in the slogan of our good friends, Drs. Waugh and Abbott—"Clean out, clean up and keep clean"—cannot for one moment be consistently belittled.

PHYSIOLOGIC THERAPEUTICS.

We do feel, however, that the importance of non-drug therapy is not properly mirrored in the medical literature of today. Of the 170 or more journals devoted to the various phases of medicine, sectarian and otherwise, not more than three are devoted to the study of this side of the great question of the successful treatment of disease.

It is believed, therefore, that there is a very good excuse for our existence, and, if we can judge by the hundreds of letters (and dollars!) received before even a line was set up or a page out, there are others who agree with us.

It will be our endeavor to produce a journal intrinsically worth every cent of its cost to the reader and, in addition, to make it essentially different from any of the other medical periodicals. Our three principal aims will be to incorporate brevity, simplicity and practicality into the contents of every page. If we succeed in accomplishing this, so that by reading this journal the doctor is enabled to practice "better medicine," we will have reached our ideal.

THE TERM "PHYSIOLOGIC THERAPEUTICS."

During the past fifty years there has been a progressive forward movement looking toward the rescue of various phases of physical therapy from the realms of empiricism and quackery. This forward movement in the standardization and scientific correlation of physical therapy, was really headed by Winternitz, in connection with his classical work in behalf of hydrotherapy.

Within the past decade, various phases of physical therapy have been greatly strengthened, and have been correlated into a comprehensive system of practice, which may be used as a system in itself or in connection with drug therapy. Originally, the use of physical methods was confined more largely to the sanatoria, but, fortunately, they are now being quite rapidly and generally introduced into private practice.

As the scientific foundation became more and more developed, it became necessary to find some group name to represent these combined non-medicinal agencies used in the treatment of disease. Various names have been in use—physio-therapy, physical-therapy, non-pharmaceutical-therapy, non-drug therapeutics, etc., etc.

The term "*physiologic therapeutics*" had also been used by some, and in 1902 there appeared a series of volumes entitled, "A System of Physiologic Therapeutics," edited by Dr. Solomon Solis Cohen. Accordingly, for the past six or eight years, this term has been quite generally accepted as representing all therapeutic methods other than drugs. The term, therefore, embraces all non-pharmaceutical remedial agencies used in modern medical practice and includes a powerful

group of physical agents with which the body is constantly concerned when in a state of health, and which may be so combined and modified as to profoundly influence and favorably aid the diseased body in its efforts to bring about a return to natural and normal function.

There can be no doubt but that drugs will always have a place in the treatment of disease, but it must be recognized that the present movement in medicine is toward more rational and scientific therapy. That is, the employment of various phases of physiologic therapeutics which may be said to include the following distinct lines of treatment:

- | | |
|--------------------|-------------------------------------|
| 1. Hydrotherapy. | 8. Mechanotherapy. |
| 2. Thermotherapy. | 9. Pneumotherapy. |
| 3. Phototherapy. | 10. Psychotherapy. |
| 4. Electrotherapy. | 11. Serotherapy. |
| 5. Radiotherapy. | 12. Dietotherapy. |
| 6. Massotherapy. | 13. Climatotherapy. |
| 7. Vibrotherapy. | 14. Hygiene or Preventive Medicine. |

While the term "physiologic therapeutics" is, in some respects inadequate and its use unfortunate, nevertheless it represents the best term available under which to include and group all forms and phases of physical remedial agents.

WILLIAM S. SADLER.

ELECTRICITY IN GYNECOLOGY.

In glancing through the "Current Literature" columns of our esteemed contemporary, the *Boston Medical and Surgical Journal*, we were astonished to find that one of the editors, in abstracting an article by Dr. S. Sloan, of Glasgow, on "Electrotherapeutics in Gynecology," from *The Lancet* (Feb. 5, 1910), writes as follows: "According to Sloan, electricity in one form or another will benefit practically all gynecological conditions, among which he includes hemorrhoids and constipation! The paper is not convincing."

Please note the exclamation point! Evidently the editor lacks in electrotherapeutic experience what is unquestionably made up in editorial acumen, and is, therefore, hardly in a position to make such statements. Many a physician whose advantages for study are not to be compared with those of our worthy confrere have actually corroborated the statements made in this excellent paper in *The Lancet* by the President of the Electrotherapeutical Section of the Royal Society of Medicine, for such is the Dr. Sloan in question. Hundreds of physicians—and patients, too, for that matter—will unqualifiedly state that electricity in gynecological practice is a means, when rightly used, to positively remarkable ends. As to its benefit—"cure" was not the word—in "hemorrhoids and constipation," the value of positive galvanism in hemorrhoids and slow sinusoidal

electricity and even abdominal faradism in constipation is known by every progressive physician *who is using electricity* as a therapeutic measure.

There seems to be an unfortunate iconoclastic tendency on the part of a number of physicians to decry electrotherapy and class it with the "quackish." These gentlemen are, of course, free to have their own opinions and to express them; but such depreciatory hints do not confound the man who *knows* from his own personal experiences. Nothing gives so much confidence as results.

IS THERE A NEED FOR THIS JOURNAL?

On first consideration of a journal devoted to therapeutics and which excludes drug therapy, we confess that the practicability and desirability of such a publication seemed questionable. In fact we were inclined to the belief that the limited field to which a journal of this kind would be restricted, would render its contents of interest to but few of the medical profession. But on further consideration, and especially when we recalled the occasional case of pneumonia in children, of scarlet fever, of tuberculosis, and the numerous cases of enteroptosis, constipation, diarrhea and various functional nervous disorders that have been treated, practically or entirely without medicine, we concluded that there is opportunity for much being said on therapeutics, even if mention of drugs is omitted.

Then these questions occurred to us: Are our views on this subject radically different from those of a large number of up to date physicians of the present day? Is there not a considerable percentage of physicians who are endeavoring to do away with empiric drug therapy, and supplant it with rational, common-sense, truly beneficial means of treatment? If such is the case, then there is ample reason for the discussion of these subjects, and *PHYSIOLOGIC THERAPEUTICS* appears at an opportune time. Moreover drug treatment is undoubtedly receiving its just consideration at the hands of other journals.

Lest an impression to the contrary should gain prevalence, let it be understood that the journal in *no way* opposes the practice of drug therapy according to our enlightened views of the subject at the present day, it merely refrains from discussing the subject. Furthermore we trust that neither the editors of, nor the contributors to, the journal may appear to some as "faddists," by this we mean men who, by some particular method, claim to treat disease more successfully than their brother physicians, who employ the best of all beneficial means of treatment known to them. For this reason it is not fitting that the journal should devote too much space to any one subject. It should seek articles upon all of the ethical, practical and beneficial methods of treatment known to the profession (drugs excluded for reasons stated), and it is to be hoped that such future

articles will possess that degree of merit that they will be readily and anxiously reviewed by the best journals of the country.

We feel confident that it will prove of interest and enlightenment to some, to read in our columns how much is being accomplished by our best physicians in common, ordinary ailments as well as in the more complicated and rarer diseases, through the employment of various natural and practical measures of treatment, not entailing the use of drugs or greatly enhancing their value when employed. It occurs to us that since the time has arrived when certain intelligent patients remark to their physicians: "I am so glad you do not use much medicine," it is time for physicians as a whole to ask themselves: "Am I abreast of the times in the treatment of my patients?"

RICHARD F. CHASE.

THE IMPORTANCE OF CO-OPERATION.

In order that any project may be a success one of the most important essentials is, we believe, co-operation. Were *PHYSIOLOGIC THERAPEUTICS* subsidized with the fortune of a Rockefeller it would be useless without subscribers. Now it so happens that there is no fortune back of us, save, perhaps, a little initiative. We believe that there is really a need for a journal of this kind and that there are more than enough interested men in this country who actually want such a journal, who would be willing to back it with their subscription and their influence.

After "sounding" a number of gentlemen known to be especially interested in the various phases of physiologic therapeutics we decided to begin. We were especially encouraged by the following, printed in a comparatively recent number of *System*:

GET THE THING STARTED.

That is one-half of success.

The other half is—get the thing *done*.

Starting the idea into operation and doing it to a complete finish—that is the only road to results.

At your desk—in your office—at the counter—on the road—in the shop:

Get it *started*—push it *through*.

Initiate!

AND FINISH!

Usually the common, everyday factors in our lives are the ones that are the most frequently taken for granted and overlooked, and until one carefully looks into the matter the importance of co-operation is not fully evident. Without a doubt this "working together" is one of the greatest

factors, if not the greatest, in the successful promotion of any idea, no matter whether in the home, in business, in research or in politics.

When we pause to think, it is quickly clear that were it not for co-operation, our existence would be very different indeed from what it now is. As a matter of fact, practically everything that we eat, drink, wear or use, whether personally or in the pursuance of our professional work, is a result of the application of the principles of co-operation.

Now we are desirous of making a point for our own benefit. We are not issuing **PHYSIOLOGIC THERAPEUTICS** from altruistic motives alone. We must see to it that the balance is on the right side. **WE WANT YOUR CO-OPERATION!**

Naturally, this is something that lies close to our hearts, and we are anxious for your co-operation to the limit. We want your criticisms—for then we know just what suits you and what does not. We want your assistance—correspondence, queries, case reports, original articles and anything that may appeal to you as of help to the journal, and through it to its readers. We want your moral support—the kind word spoken from time to time, and the personal work which does so much toward bringing in the new subscribers. Elsewhere there are to be found several propositions and plans that may interest you. Read them through carefully—then co-operate!

CRITICISM.

*"Oh, wad some power the giftie gie us
To see oursels as ithers see us."*

When the immortal Burns penned the above lines, he expressed just what is in our minds now that the work of making this first number of **PHYSIOLOGIC THERAPEUTICS** is completed. We confidently believe that the criticisms will not be few and far between. Just what kind of criticisms they will be is not for us to say—we only hope on.

We would greatly appreciate straightforward, candid criticism. We want you to write us a letter and give us your ideas, for we are confident that with the help of many this journal may be made and maintained a leader in its field. Would it be too much trouble for you to write us a few lines? *Now* is a pretty good time.

**The reward for a good deed is
in having done it.**

**The charm of reading is in the
recognition of what we know.**

**If you want things done, call
on a busy man—the man of
leisure has no time.**

ORIGINAL ARTICLES

A NEW METHOD OF TREATING PROSTATIC DISEASE.

BY C. S. NEISWANGER, M. D., CHICAGO, ILLINOIS.

Professor of Electro-Therapy Post Graduate Medical School, Bennet Medical College, and President of the Illinois School of Electro-Therapeutics.

DuBois Reymond in his experiments observed that "heat coagulates the muscular plasma and brings about an *acid* condition"; also "a muscle that is fatigued assumes an *acid* condition." Schiff makes the observation that "Veratria renders the muscle rigid, unirritable and *acid*." We know today that the anode of a continuous current attracts oxygen from the body fluids. Oxygen is an acid maker. Therefore the part in connection with the anode is rendered *acid*.

What is the significance of this acid condition of tissue?

It may not be new to you, because it was discovered as far back as 1859 by Funke and other observers, that the beginning of the death of any tissue, nerve or muscle, is marked by a progressive acidity and subsequent coagulation of the muscular plasma. I have used the phrase "the beginning of death," but do not mean that the tissue is going to die. I only use the phrase to express a certain condition—an underactive condition.

It is also a well proven fact, first observed by Schiff, that all overactive conditions are alkaline, and that inflammatory lesions are due to excessive alkalinity of the part. Did you ever stop to think that your patient could not have pain with an acid condition, that it is impossible since an acid condition is absolutely against pain? Do not bring up the question of rheumatism, which we have been treating on a wrong pathology for a hundred years, because the deposit of articular rheumatism is not uric acid but urate of sodium, and sodium urate is not an acid but an alkali, and the same thing that causes pain in rheumatism causes it anywhere else in the human body—alkalinity.

Heat and Galvanism in Prostatic Inflammations.

Within the past year I have devised an electrode for the application of heat and galvanism to the prostate gland, the seminal vesicles and the female pelvic organs, which I shall describe and give the technic of its application.

There seems to be no doubt in the minds of thinking physicians that prostatic disturbances and their sequelæ are amongst the most serious lesions for which they treat men. The symptoms are often so varied and diverse as to mislead any but an astute diagnostician, who, not finding the gland hypertrophied, is apt to look for the trouble elsewhere.

While my former methods of treating the prostate have been productive of much good and have brought favorable comment from many

physicians, they were by no means ideal. The method I am about to mention, however, is much superior in many respects and does not necessitate entering the urethra.

If you were called upon to treat an irritable gland that was accessible and in plain sight, the first remedy you would likely think of would be heat. If you understood something of the therapeutic properties of electricity you would undoubtedly combine this heat with positive galvanism. The heat is indicated because, as previously stated, it coagulates the muscular plasma, and brings about an acid condition, which means an underactive or sedative effect. The positive galvanism is used because it also begets an acid condition and relieves congestion by constricting the blood vessels.

When the prostate is involved the seat of operation is not very accessible nor in sight, therefore if we would employ these two valuable therapeutic aids, we must devise some special means for their application.

The fork is a simple instrument, yet it has taken a thousand years to develop it, and although it might seem a simple matter to apply heat and positive galvanism to the prostate gland, it is not so easy to accomplish it as it seems. First because the applicator must be kept at an even temperature; and second, the metal comprising the conducting portion of the electrode must *not come in contact* with the mucous surface being treated.

The electrode I have devised, and which answers the purpose admirably, is shown in the accompanying illustration. It may be described as follows:

A soft rubber rectal tube about 15 inches long and having a caliber of 32 F. has the distal end perforated with small holes for a distance of $2\frac{3}{4}$ inches.

The tube is fitted its entire length with a spiral wire composed of galvanized iron. To the proximal end of the spiral wire is permanently attached a metal fitting for the tube of an ordinary fountain syringe, and to this is soldered a receptacle for the conducting cord from the battery. To the perforated end of the tube an ordinary goldbeater skin condon is firmly tied, so as to include all of the perforations within the skin bag.

A fountain syringe containing about one quart of normal salt solution at a temperature of 125° F. is placed at an elevation of about six feet.



Technic of the Treatment.

Place the patient in Sims' position with the usual wetted pad on the abdomen attached to the cathode of a continuous current. After having thoroughly wet the skin bag, inside and out, force out all the water through the perforations, lubricate well and introduce into the rectum to cover the prostate. Slip the rubber tube from the syringe over the end of the electrode and allow the hot water to run into the bag until it is filled. Now fasten the tip from the anode of the battery into the receptacle on the electrode and turn on the current until 30-40 ma. is reached. Continue the sitting for ten minutes and repeat three or four times a week.

It is always best to have a "cut off" on the syringe tube so as to allow only a sufficient flow of water to just fill the bag, otherwise the pressure is liable to break it. The patient is always able to tell when the bag is filled.

A few cases will serve to illustrate the advantages of this method:

Case I. Mr. M. B. J., age 82; dairy farmer; a veteran of the civil war; had never missed a day's work from sickness until six months before coming for treatment, when he gave up business altogether. Upon examination the prostate was found to be symmetrically enlarged to the size of a small orange. Two strictures in the pendulous urethra had been treated by gradual dilatation until the bladder had become infected. He was obliged to urinate from seven to ten times during the night. I treated the cystitis with hot boric acid irrigations and reduced the strictures by electrolysis, at the same time using heat and positive galvanism to the prostate, as has been previously described. The patient improved very rapidly and was provisionally discharged in five weeks. He writes later that he is entirely relieved and has resumed business.

Case II. Mr. B. J., aged 79; attorney; general health fair; micturition very frequent day and night; prostate gland very large and irritable; bowels very constipated. No other complications except extreme nervousness. Heat and positive galvanism were administered to the gland for ten minutes four times per week, using 40 ma. Gland normal size and consistence, with subsidence of all other symptoms, after two months' treatment.

Case III. J. A., physician; age 45. Chronic inflammation of the seminal vesicles with partial impotence for several years. No sexual desire. Prostate gland not much enlarged, but sore and irritable. Gave three treatments per week of heat and positive galvanism, with complete cessation of all symptoms in two months.

Case IV. Mr. A. K., age 40; politician; decidedly neurotic. Said he had been treated for stricture for nearly two years and was still taking treatment, but was much discouraged. Had a colorless discharge which

the advertising doctor told him was semen and that "his life blood was ebbing away." Upon examination I found the discharge to contain no spermatozoa, but that it was simply prostatic fluid. The prostate gland was somewhat enlarged and very irritable. Urethra very hypersensitive. Prostatorrhea. As a No. 32 F. sound could be easily passed, I concluded there was no stricture. I treated him with the heat and positive galvanism four times per week, using a weak solution of cupric sulphate in place of the normal salt solution. He was entirely relieved in five weeks.

Wide Scope of This Treatment.

There are several important points that may be emphasized regarding this method of treatment, viz.:

(1) The solution used in the skin bag may contain any desired medicament to be used cataphorically.

(2) The technic of the treatments is easy if you have the necessary facilities.

(3) This method is of the greatest value in treating an irritable retroverted uterus.

(4) Enuresis yields quickly to this treatment.

(5) This procedure is indicated in the treatment of any lesion dependent upon an irritable rectum.

Marshall Field Building.

You must grab old Father Time by the forelock, if you wish to get a great deal accomplished in this world. Vacations are fine things. Every man should have at least one a year. But vacations oughtn't to last too long. The old school-day plan of working nine months and laying off three won't go in business. There's a germ of laziness in every man—especially in the summer. **BUT THE MEN WHO KILL THAT GERM BECOME THE REAL HUMMERS.** The man who lays aside all study in summer is away behind the man who doesn't, by the time the frost is on the pumpkin. Grab old Father Time this summer. He is waiting to hack you with his scythe.

RADIANT LIGHT AS A REMEDY.

BY T. D. CROTHERS, M. D., HARTFORD, CONNECTICUT.
Superintendent Walnut Lodge Hospital.

Light from an arc or incandescent lamp has a powerful remedial effect that has not been studied, save in a very general way.

A few years ago Dr. J. H. Kellogg of Battle Creek, Mich., lined a cabinet with reflectors, over which he arranged a large number of incandescent lights. The patient, in a nude state, was placed on a stool in the center of this blaze of light. In a very brief time the skin became intensely red and profuse perspiration followed, with general relaxation of the body. The patient was then placed under a warm shower and, after vigorous rubbing, reclined and rested for two or three hours. The effect of this was most pleasing, and in some cases the subsidence of the acute symptoms was so marked as to be the beginning of recovery.

This form of bath has been used in many institutions, with generally good results. As a therapeutic agent it is of great value, but the preparatory and after-treatment greatly intensifies its physiological action.

Methods of Applying Light.

Various methods and means of applying these two agents are used. Some prefer the cabinet which allows the head to project through the top, leaving only the body exposed; others believe that a room with both head and body exposed is the best. In this bath the hair requires protection by a wet towel to keep the oil from being absorbed and dried out. My experience with the bath in a room in which both head and body are exposed to a large number of incandescent lights has shown that this is preferable to the arc light, because of its milder action and more gradual relaxation of the tissues and nerves.

The arc light has been found to be more powerful. Its rays are more active. The perspiration more intense, and the relaxation of the body more marked. The arc light is concentrated on the body by means of reflectors, and has many very warm advocates.

In acute inflammations, particularly those of the stomach, lungs and liver, the arc light concentrated on the locality of the disease seems to produce a decided change in the inflammatory action with pronounced relief of pain and diversion of blood to the surface.

A third form of the use of radiant light is that of the Leucodescent lamp, a powerful incandescent lamp with a reflector back of it to concentrate the rays on local areas of the body. This form of the light remedy is exceedingly practical and can be used in office practice and in homes where electric light is used and promises to be one of the most valuable local remedies which have been introduced into medicine.

The physiology of the action of the light consists simply in wave lengths and wave currents striking on the surface of the body with such

intensity, and no doubt penetrating into the interior, producing physiological and pathological changes in the activities of both the circulation and the metabolism. This form of bombardment of light-wave activities in a brief time produces cutaneous palsy and blanching of the surface, and later intense redness and tremendous activity of the cutaneous blood vessels.

The water of the blood is thrown off in the profuse perspiration which is thrown off to protect the skin from this intense chemical activity. The diversion of the blood to the surface is nature's protective effort to prevent corrugation and erosion. The effect of hot air by raising the temperature on the surface of the body does the same thing, but in this case there is more exhaustion and slower restoration.

The Therapeutic Action of Light.

The action of light is more than merely that of producing excessive surface stimulation, and with it elimination through the veins and arteries. There is a definite chemical effect which not only diverts blood to the surface, but changes the activities of the protoplasm and cells of the body.

There is a noticeable effect on the nerves, evidenced by diminished irritation, pain and discomfort. There is a physiological effect in lowering the tension of the arteries, and diminishing the heart's action as well as draining the water from the blood and tissues. These are all evidenced by the marked relaxation and tendency to sleep which usually follow such treatment.

Another effect has been noted, that of more rapid absorption and pronounced action of drugs. Thus quinine, morphine or any of the mineral drugs, administered after the bath, produce more pronounced effects in smaller doses. Sulphate of magnesia is more effective as a cathartic, and the vegetable acids and alkaloids are more active.

A large number of patients suffer from toxemic conditions, and the use of light as a remedy seems to be peculiarly adapted to diminish the toxins and eliminate them. Another class of patients suffer from deranged metabolism with subacute inflammatory states, and here the therapeutic action of light seems to be very powerful. A third class may be termed psychopaths, suffering from nerve exhaustion and derangement of both functional and organic activities. Here the light is equally powerful in its relaxing action on cell and tissue.

Clinical Experiences with Light Therapy.

It has been found from experience that the use of the light must be preceded and followed by many means and measures to secure its best effects. Thus one obstinately constipated should be treated for this condition by hydropathic measures and salines. Then the light can be used with good effect.

In cases of severe dyspepsia and profound derangement of metab-

olism, it is found that hydropathic measures, diminished diet, removal of the active causes, greatly intensify the action of light. Salines, warm showers, sponging with warm water should always precede and follow the use of the light bath.

In a case of acute pleurisy the body was sponged with warm saline water, then the light was applied over the pleura, until the whole body began to perspire, then the body was once more sponged with hot water and the patient allowed to rest in a well ventilated room. The pain quickly subsided, the patient breathed with more ease and sleep followed. A few hours later a return of the pain was followed by the same treatment with the same results, and recovery followed within a short time.

In another case of profound anemia, with dyspepsia and insomnia, the patient was placed in a warm bath, then given a light treatment in a cabinet until perspiration came on, then appropriate remedies, and sleep followed. This treatment was continued every day until recovery.

Where a light bath is not convenient, a large leucodescent lamp is most practical and can be used with about the same results if preceded by baths and other suitable eliminative measures.

The light with the rays passing through a blue screen is decidedly sedative and analgesic, and no remedy will be followed by more pronounced relief than this. Acute dyspepsia is often treated by the lamp alone with very gratifying results.

The principle to be remembered is that the action of light waves of different lengths on the surface of the body must be supplemented by changes in the temperature of the body, by water baths and eliminatives. This seems to prepare the body for this form of mechanical energy, making the latter more intense.

There are, no doubt, other rays in both the arc and incandescent light that, by their increased activity, have a specific action on cell and tissue activity. The blue screen, the ultra-violet and red screen through which the light passes, has each its particular effects which are subjects for further study. The practical fact is that light of all kinds has a distinct remedial value in destroying germs, neutralizing toxic products, removing chemical products and causing mechanical congestion; but, ilke many other agents, it must be used in connection with other means to obtain the best results.

Water and light are, no doubt, the most powerful remedies which can be used for the prevention of disease and the restoration from diseased conditions. Already a literature has appeared which gives great promise to the future and indicates a very wide field for remedial use.

Every physician should have in his office a large therapeutic lamp and, if possible, a cabinet and other means of using light; then, with accurate observation and experimentation, he will soon realize the tremendous value and possibility of these forces.

INDICANURIA AND ENTEROPTOSIS.

BY HENRY R. HARROWER, M. D., CHICAGO, ILLINOIS.

Professor of Clinical Diagnosis, Bennett Medical College, etc.

The work of the clinical laboratory is not infrequently of great assistance to the physician in emphasizing the necessity for giving special attention to certain conditions which, without the valuable guidance of the laboratory findings, might otherwise have been entirely overlooked. For this reason it is always advisable, when consulted by an individual for the first time, to see to it that a specimen of the urine is properly collected and examined as soon as possible. With the report of this examination at hand one is in a better position to find out the disease conditions as they really are.

Frequency and Significance of Indicanuria.

One of the most frequent abnormal urinary findings is indican in excess. Considerably more than half of all the hundreds of specimens that have passed through my laboratory have shown the presence of indican in varying quantities, usually, however, in very evident amounts. That this is a mere coincidence cannot for one moment be considered. Many other investigators will corroborate the fact that indican is one of the most commonly found abnormal substances in the urine. Because of this some have gone so far as to say that indican is normally present in the urine of the omnivorous human. This is not true.

The ideas of those medical men who still consider indican to be of little or no real clinical significance are, to my mind at least, sadly at fault. The fact that indican itself happens to be a non-toxic substance proves nothing. Without a doubt the presence of indican is evidence of the co-existence of other substances manufactured simultaneously. The presence of these toxic bodies in the blood is unquestionably harmful. Be that as it may, the careful investigator quickly accustoms himself to look for certain physical findings accompanying certain of the urinary findings, which his clinical experience has shown him to be frequently associated with one another. It will not be my object here to discuss these various findings in detail, but rather to call particular attention to a clinical combination which investigation has proved to be much more common than has ordinarily been supposed.

Indican and Prolapsus Found Together.

The examination of a large number of specimens of urine, coupled, in many cases, with a careful examination of the abdomen and its contents, leads me to believe that enteroptosis is very often closely associated with the finding of indican in the urine. It would not be proper to construe this as a hard-and-fast rule, nor would it be either consistent or scientific to say that the majority of those showing an indicanuria are

suffering from prolapsed viscera; but from my own experience I am led to believe that this condition, or, rather, combination of conditions, is more frequent than is generally believed to be the case. At all events, it will be perfectly safe to suggest that the clinician make a specially careful examination of the abdominal walls and the position of the various abdominal organs when the urine report shows that indican is present.

In a recent communication Dr. Boardman Reed, of Los Angeles, Cal., emphasizes the frequency of abdominal prolapse in pulmonary tuberculosis. He believes that the treatment of this disease is not complete without the suitable support of the abdominal organs if necessary. This is an important point and one worthy of much more extended attention. It has been found that the absence of indican in the urine of the tuberculous is the exception rather than the rule.

Whether other investigators will corroborate these statements matters little; the fact remains that these two clinical findings—indicanuria and enteroptosis—have been repeatedly found together. As a matter of course, therefore, the obvious therapeutic indications have been acted upon in the treatment of these patients, with very favorable results.

The *raison d'être* of this combination is not difficult to explain. Indicanuria is considered by the majority of physiological chemists to be due usually to putrefactive changes in the intestinal contents. The presence of the poisons generated under such circumstances must, of necessity, have an unfavorable effect on the intestinal walls and especially on the glandular and muscular portions. In consequence the glands do not secrete their normal fluids and the intestinal musculature loses its tonicity, with the inevitable dilatation, constipation and other accompanying symptoms. This very combination is an important factor in the production of prolapsed viscera, and, associated with the general autointoxication which is the usual accompaniment, the abdominal walls become flaccid and permit of the gravitation of the abdominal contents. As a result the intestinal disturbances are rendered worse and in this way a vicious circle is established, which can rarely be remedied by the ordinary eliminative treatment alone.

Points in the Removal of Indican from the Urine.

The removal of indican from the urine is, in most cases, a comparatively easy matter. Stimulation of the emunctories and a judiciously selected dietary in which the proteid content is reduced to the minimum will, in a reasonably short time, cause a diminution in the putrefaction going on in the bowel, and with it, of course, a disappearance of the indican. It will be found, however, that the majority of these patients revert sooner or later to the old state of affairs, and the conditions here under discussion return and become as bad as ever. For this reason I

am of the opinion that the usual therapeutic and dietetic measures are not all that might be desired.

If one adds to the usual treatment outlined very briefly above the proper support of the abdomen by means of a suitable corset or binder, and emphasizes the importance of several dietetic maxims, such as deliberate eating, simple food combinations and less meat or other foods high in proteid, it will be found that considerably better and more lasting effects will be obtained in the treatment of autointoxication, due to intestinal putrefaction and its results. It would seem that the best support for women is the front-lacing corset in which the waist is snug *but not tight*. Men may use a supporter made on the same principle, but not extending above the waist. One manufacturer here in Chicago is making a specialty of scientifically fitting such cases for the profession.

It must not be supposed that because indicanuria and enteroptosis have been so often found together that the removal of the one necessitates the disappearance of the other. Excessive intestinal putrefaction may be inhibited and indican promptly disappear from the urine, but the prolapsed abdominal organs remain where they are. On the other hand, a finely-fitting abdominal support may be used for months and indican still be found in excess. The treatment of this combination of conditions is evidently a matter of judiciously combining the various essentials mentioned above.

In closing I will make the following conclusions and suggestions:

1. When indican is found to excess in the urine, look for prolapsed abdominal viscera and the usual accompanying results.
2. When enteroptosis is evidently present, look for indican in the urine.
3. In the treatment of intestinal autointoxication, in addition to the usual dietetic and eliminative treatment, support the abdomen. In so doing the desired results will not only be more quickly achieved, but they will be more permanent.
4. The treatment of chronic intestinal putrefaction is not complete unless special efforts are put forth to strengthen the abdominal walls as well as the intestinal musculature by such physical measures as exercise, massage, electricity (especially the sinusoidal current), hydrotherapy, etc.
5. The statements of certain investigators to the contrary notwithstanding, indicanuria is distinctly a pathologic condition and must always be considered as such, no matter how good the general health may appear on superficial examination to be.

72 Madison Street.

[EDITOR'S NOTE.—A carbon copy of the above paper was sent to Dr. Boardman Reed, with the request that he comment thereon if he felt so inclined. His answer, received just as we go to press, contains the following interesting statements:

"The points in your paper are well taken. One of them, however, I would probably put a little differently. I believe that when indicanuria is present in enteroptotic patients, as it very frequently is, the enteroptosis has usually been the primary cause of the indicanuria, by interfering with excretion through the bowel. Perhaps both may have had a common cause in the very prevalent overloading of the stomach. Still, as is intimated, a vicious circle is ultimately produced in either case, and matters go on from bad to worse.

"It will interest you to know that in my experience I have seen a number of bad cases of asthma greatly relieved, and some of them radically cured, by strapping up an associated prolapsed stomach and right kidney. In these cases there was a coexisting indicanuria which, of course, had much to do with the causation of the asthma."]

THE PHYSIOLOGIC EFFECTS OF SWEDISH GYMNASTICS.

BY LIEUT. JAMES LINDGREN, LOUISVILLE, KENTUCKY.

Instructor in Gymnastics Southwestern Medical College; Graduate Royal Gymnastic Central Institute, Stockholm; etc.

The word "Gymnastics" is, in this country, generally understood as referring to calisthenics or exercises with dumbbells, wands, etc., and other more or less hard work with or without apparatus, and, therefore, hardly suitable for weak or elderly persons. Such a notion ought to be eliminated, at least from the minds of medical men.

Swedish Gymnastics a Science.

In Sweden, the home of this method of treatment, the medical gymnast graduates from the Royal Gymnastic Central Institute of Stockholm with a thorough medical training in anatomy, physiology and pathology, in addition to a practical training in the administration of various manipulations of the human body. For this reason his assistance is welcomed by progressive physicians here, as it already has been in Europe for many years:

The aim of gymnastics is, primarily, to secure and maintain health. When applied to the sick the exercises are based on pathological considerations and called "medical gymnastics." When applied to the well, the exercises are called "hygienic." In both cases the procedures are constructed and administered on physiological principles. Since the exercises are to be applied for the sake of the one that is exercising, a system of gymnastics must necessarily be based upon the laws of the organism itself, and not upon any arbitrary considerations. Thus, exercises are chosen for their physiological effects, rather than for any muscular development which they may cause.

The Swedish movements are planned to encourage Nature in her normal activities and also to prevent and overcome tendencies to abnormal development. In fact, they serve to a great extent to counteract the evil effects due to our modern civilization.

The Effects of Gymnastics on the Body.

We will now very simply consider the physiological effects of gymnastics on the different organs of the body:

THE LUNGS. Every muscular exertion is involuntarily associated with an increased inhalation, Nature thus providing an increased supply of oxygen to take the place of that which is used up by the muscular contraction. In other words, exercise induces respiration. In consequence the pulmonary circulation becomes accelerated and the quantity of air inhaled and of carbon dioxide exhaled is greatly increased. The elimination of water through the lungs also increases in proportion to the amount of exercise taken.

If carbon dioxide is not rapidly carried off by the blood, the tissues would soon be unable to work; hence to insure the proper elimination of carbon dioxide from the body and to maintain health, it is essential that muscular exercise take place.

Since oxygen is one of the chief power-producing elements, it can be said that to be strong—capable of much work—a good breathing capacity is of even greater value than muscular strength; for the former gives one the quality of endurance or ability to hold out. Consequently we find that properly graded exercises strengthen and develop the breathing apparatus, and, on the other hand, that lack of exercise slowly weakens the lungs and often leads to tuberculosis and other diseases.

THE BLOOD AND CIRCULATORY ORGANS. The increase of the color and quickening of the pulse shows that exercise accelerates the circulation. When a muscle contracts, it exerts pressure on those vessels which are located in or around it. The arteries, having hard and firm walls and a great blood pressure within them, are but slightly affected; but the veins, with more elastic walls and a lower blood pressure, are more affected, and thus this muscular pressure drives the venous current toward the heart with an increased speed. This produces a suction in the veins, causing a new supply of blood to rush in, while, at the same time, the absorption of oxygen in the contracting part causes the arterial current to flow more quickly to it in order to supply the waste. Hence we can say that bodily movements act on the circulation much after the manner of a force-pump.

Respiration also affects the circulation. At each inspiration the elastic air cells resist the pressure from the inhaled air, causing pressure on the organs within the chest (the heart and large vessels) to be less than one atmosphere—"negative pressure." A suction is naturally caused in the direction of the lungs. The blood in the veins is drawn forward to fill the vacuum, for this suction, which by deep inhalation becomes four or five times greater than that during ordinary breathing, is a powerful aid in the propulsion of the blood in the veins.

Exercise has **also a great influence** on the quality of the blood, for

by the increased air pressure, endosmosis and exomosis are made more active, and the absorption of the vital constituents becomes more rapid. Besides this, the blood is enabled to carry away waste materials the more quickly, throwing it off through the organs of excretion, and thus improving its own quality.

THE DIGESTIVE ORGANS. At every inspiration the diaphragm flattens and exerts a pressure on the contents of the abdomen, the walls of which rise. At expiration the diaphragm rises and the abdominal walls again sink. Thus the diaphragm and the air above it act like a pump, causing a constant oscillation of the abdominal and pelvic contents. This motion aids the peristaltic movement of the stomach and intestines in carrying food downward, and in hastening the processes of digestion. It is well known how exercise increases the appetite, and with it brings a more perfect digestive capacity and more rapid absorption.

During exercise the circulation through the liver is very much augmented, especially by flexions of the trunk, which movement, by accelerating the circulation through the inferior vena cava, causes a suction in the veins which feed it.

THE SKIN. The cutaneous circulation is stimulated, the skin grows red and perspiration increases. The amount of fluid evaporated from the surface of the body is twice (or more) the amount during rest, and water, chloride of sodium, acids and even nitrogenous materials are thus eliminated. This evaporation lessens the temperature of the body and tends to prevent it from becoming abnormally high. If the pores are closed by dirt, or if there is anything else to check evaporation, the bodily heat rises and the muscular power falls.

THE KIDNEYS. On account of the increased skin evaporation, not only the water of the urine, but also certain of its saline constituents, are lessened. On the other hand, by lowering the normal activity of the skin and lungs, lack of exercise forces the kidneys to increase their excretory functions, a factor which must certainly be a contributing cause to various diseases of these organs.

THE ORGANS OF LOCOMOTION. In active muscles there is a change from neutral to alkaline reaction, the principal chemical changes being the oxidation of the hydrocarbons and the formation of free acid. As a result the muscles grow larger, heavier and richer in nitrogen. As the muscles grow the bones and other passive organs of locomotion increase in size and strength. On the other hand, unused muscles diminish in size and strength and may finally cease to respond to cerebral influences. At the same time it must be remembered that injudicious exercise of a muscle will cause it to decrease in size and power after it has reached a certain degree of development. Under these circumstances, if the food does not contain a sufficient amount of nitrogen, other parts of the body

have to furnish the supply to the active muscles. In such cases the heart usually suffers the most.

THE NERVOUS SYSTEM. Experience has proved that inactive motor nerves grow progressively weaker, degenerate with fat and finally lose all irritability, so that it may even become impossible to will to cause motions which are controlled by these particular nerves. With this phenomenon the sensory nerves usually become highly sensitive and even morbidly irritable. The nervously unstrung are to be found among the brain workers of sedentary habits, and not among laborers and persons leading an active outdoor life. In all active exercises the cerebral influence to the acting parts is highly increased, and it may be said that the nerves in question are even more active than the muscles which they move. The consequence of this is that the nutritive results of muscular contractions are taken up by the nerves still more than by the muscles; thus exercise becomes effective in strengthening and developing the nervous system and in maintaining it in its normal equilibrium.

THE MIND. As the general circulation and the quality of the blood improve, the brain is better nourished, and its powers are increased. Only in a healthy body can we find a healthy mind. Many believe that it is impossible to combine great mental work with severe bodily exercise, but experiments have proved this to be a fallacy; for if the two are judiciously made to alternate, it will be found that the results of each become much more extensive and of far better quality.

In conclusion, I would say that gymnastic exercise develops a consciousness of power which inspires courage, confidence and resolution. Through its influence on the whole organism the moral self becomes healthier and stronger, and man becomes in every way better fitted to lead a life of usefulness.

639 South Third Street.

Great people are teachers
through necessity, for it is only
in explaining a matter to another
that we make it clear to ourselves.

We are weaving character
every day, and the way to weave
the best character is to be kind
and to be useful. And character
is the result of but two things:
our mental attitude and the way
we spend our time.

Teachers are those who edu-
cate people to appreciate the
things they need.

THE X-RAY TREATMENT OF ACNE.

BY EMIL H. GRUBBE, B. S., M. D., CHICAGO, ILL.

That the x-ray has firmly established itself as an indispensable agent in the treatment of acne is believed by all who have given this subject careful study. This treatment is even considered by some dermatologists so positive that they are willing to pronounce it specific.

Acne is a disease which, with few exceptions, may exhibit more varied symptoms than any other skin disease. Because of this great variety of manifestations, many cases of acne are a perpetual puzzle to most physicians. To complicate matters one finds, on consulting the books, that the usual classification is hardly sufficient for clinical purposes.

Impoverished Circulation an Important Factor.

The causes of acne are also numerous, but do not merit details here. Although this paper will deal particularly with the most common form of acne, known as acne vulgaris, it might be said in passing that the x-ray is very useful in the treatment of all acnes save that due to drugs. When the lesions of acne are studied at close range, it will be found that insufficient skin elimination is undoubtedly one of the predisposing causes of this disease. The sudoriferous and sebaceous glands, as well as the hair bulbs, are particularly concerned. These organs retain waste products and become clogged, and, as a result, there develops a retarded cellular activity and ultimately a lowering of the vital resistance. It will also be noticed that the circulation in the skin is not good. This arrest of the circulation in the superficial blood-vessels allows of the development of two conditions: (1) A lack of nourishment in the skin and (2) localized infections—due to the poor resisting power. When the disease has become chronic, we have not only functional disturbances, but also organic changes in the skin.

From what has been said regarding the poor quality of the skin-circulation in acne, one would, when looking for a remedy, naturally use something which will increase the flow of blood locally. Irritation is, broadly speaking, the basis of all remedies which are used to stimulate the blood-flow. The x-ray, when used therapeutically, is an irritant, and as such has a very wide field of usefulness.

How the X-Ray Acts.

The treatment of acne by means of the x-ray depends upon the fact that, like other therapeutic measures, it exerts a double effect upon the skin and its appendages. It is simultaneously a builder and a destroyer. The irritative properties of the x-ray bring an excess

of blood to the lesions; the lumen of the blood-vessels becomes greater and more nourishment is brought to the region. This assists in the development of new and healthy cells and, in addition, assists in the removal of the dammed-up waste products. The appendages of the skin, the sebaceous and sudoriferous glands and the hair papillæ, receive this irritation and are thus excited to a greater and more normal activity. Toxic material, the accumulation of which composes the bulk of the contents of the acne lesion, is removed and the tissues again assume a healthy appearance.

Although the x-ray has been successfully used in acne by many operators using a variety of methods, it goes without saying that considerable experience is necessary to obtain uniformly good results. In the treatment of no other skin disease is it more necessary to study individual peculiarities. Our technic should, therefore, vary to meet these peculiarities.

Since the dosage of the x-ray is unmeasurable in a direct manner, it is necessary to use a system or technic which considers relatively all the various factors which are directly concerned in the production of the rays and which, although flexible within certain limits, is reliable enough to be of practical value. Such a system can be obtained only by study and experience.

Technic of the Treatment.

In administering this treatment the patient is in either the sitting or recumbent position, whichever may be the most comfortable and at the same time make the lesion accessible.

Control of the treatment is gained by carefully watching five important factors which more or less directly control all x-ray values. The factors are: (1) Vacuum of the tube, (2) distance of the tube from the parts to be treated, (3) volume of light in the luminous hemisphere of the tube, (4) length of each sitting and (5) frequency of sittings.

Since the superficial tissues alone are involved it is not necessary to send the rays into the deeper parts. I therefore recommend a vacuum which is comparatively low. To be exact, I use a vacuum which represents an air resistance of between one and two inches. Rays from such a tube are readily dissipated, and for that reason I place the active parts of the bulb near the lesion. The distance between the tube and the skin should be from two to three inches.

Importance of the Degree of Luminosity.

It is of great importance to observe carefully the amount of light emitted from the luminous hemisphere of the tube. When the x-ray is used in diagnostic work the brightest light which it is possible to obtain should be used, but when the therapeutic uses of

the ray are desired, I advise, and have obtained the best results from, a subdued or weak light in the luminous half of the tube.

It takes a definite amount of electrical energy to produce the luminous hemisphere, and when the light is such that we can just tell the difference in luminous value between the two halves of the tube, we then have the proper arrangement for safe applications.

I believe that this factor, if observed, would make the x-ray reasonably safe even in the hands of a tyro. The bright light in the luminous half of the tube has been the cause of all that is bad in x-ray work.

The sittings last ten minutes for each region and, as a rule, are given daily. This plan is followed until the cumulative effects of the x-ray are obtained. This is shown by the development of a dermatitis. As soon as this appears the treatment is stopped until the parts are normal again. This usually takes place in from six to ten days. The treatment is then carried on as before, with the exception that we now treat every other day. I have followed this technic for many years in the treatment of acne and most other skin diseases and have not encountered a single untoward or undesirable effect.

Since most cases of acne when brought to x-ray treatment have become chronic, a longer time is taken to produce results than in acute cases. Chronic cases may have to remain under treatment for from eight to twelve weeks, while acute cases may be cured in from four to eight weeks.

This method may seem, at first thought, somewhat tedious, but when one considers the nature of the lesions and the length of time the disease has been active, several weeks' treatment is not a long time. Sometimes there is little pus present and the lesion still persists. In such cases the treatment should be crowded so that an inflammatory reaction is rapidly produced. In suppurating lesions which are large, stand out prominently and show intracutaneous infiltration of the surrounding tissues, the treatment should be less vigorously carried out. This necessitates longer time, but the ultimate effects will be much better than when the treatment is crowded. The best plan is to administer the x-ray over a considerable period (so as to be on the safe side) until the skin and its appendages have, so to speak, formed the habit of doing their work properly.

The Effects of the Treatment.

At first a slight stimulant effect is noted. The exposed parts are more highly colored than the neighboring parts. The glands become very active in eliminating the waste materials. As the treatments are continued just the reverse is noticed. A paralytic condition

develops, which is shown by the limited activity of the glands and the dropping out of the hair. The ultimate effect of the treatment, when properly given, is undoubtedly a temporary atrophy of the glandular structures in the skin. The treatment should not be carried so far that permanent atrophy of the glands or hair-bulbs occurs. Merely a temporary cessation of the function of these parts is to be aimed at.

For the reason that the use of the x-ray has accomplished so much in the successful treatment of these conditions, and since it is purely a local remedy, many dermatologists hold that this proves acne to be a local rather than a constitutional disease. True acne vulgaris is seldom constitutional, and to attribute its causation to indigestion, irregular menstruation or a neurosis is a fallacy that should be exploded.

In the majority of cases in which we have been asked to give x-ray treatments, the patient has already tried nearly everything else. The over-treatment naturally developed a tough, leathery skin in which the glands are usually considerably hypertrophied; a condition that is far from ideal. If one can treat a patient before much local irritative treatment has been tried, a substantial advantage will have been gained.

The scars, depressions and elevations of the skin that follow suppurative lesions are not usually considered amenable to this treatment. This is a wrong idea, for the persistent have obtained results which were highly gratifying. Even keloid acne is cured by this treatment.

Usual Adjuvant Treatment Advisable.

Although the x-ray alone can produce cures in the treatment of acnes, it is advisable for obvious reasons to use any adjunct measures which may be indicated in any given case. Not only may we make use of local remedies, but internal medication, when indicated, may be given with the x-ray treatment. The x-ray is not an antagonist to the exhibition of the therapeutic properties of drugs. Comedones should be expressed; pustules should be opened and treated liberally with peroxide of hydrogen; scabs should be removed as soon as they appear, and everything should be done which will relieve the acute symptoms, as soreness; itching or dryness. The more assistance that is rendered with adjunct, the more prompt and permanent will be the effects of the x-ray treatment.

In conclusion I wish to emphasize the fact that the x-ray can be employed with great advantage in practically all kinds of acne. It is not an experimental treatment, but one of definite, proven therapeutic value. Without a doubt it is the most effectual means now available in the successful treatment of this disease.

78 State street.

PRACTICAL POINTS IN HIGH FREQUENCY VACUUM TUBE TECHNIQUE.

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At the present time there seems to be more interest shown in high frequency currents than in any other branch of electricity. I believe that this is largely due to the fact that the production of portable but efficient apparatus has placed these currents within the reach of every physician, instead of limiting them to the offices of the specialist. Furthermore, the fact that high frequency currents are essentially incapable of producing damaging results and highly efficient as a therapeutic measure, causes them to be given the preference over some other methods where either may be employed for the same disease.

Accessibility of High Frequency Currents.

High frequency outfits range in price from \$25 to \$150. The smaller portable outfits are suitable for exciting the glass vacuum tubes, fulguration, etc., and some of them for light X-ray work, as in the treatment of surface ailments, or in taking pictures of the extremities. These are not claimed by the manufacturers to take the place of the large outfits for auto-condensation and heavy X-ray work. Notwithstanding this fact, I have seen a number of small outfits that give very creditable and satisfactory pictures, even through the thick parts of the body.

By far the most common use of high frequency currents is with the glass vacuum tubes, and this paper will be devoted to the consideration of a few practical points concerning their application. I take it for granted that the physician, without instruction, would naturally figure out the general method of treatment, but there are many special points which one gains by experience and where a suggestion will be of advantage to the practitioner and save him the time and trouble of working it out for himself. For instance, nowhere in the literature on high frequency have I ever seen one word about the care of the tubes; i. e., the importance of sterilizing them so that infection may not be communicated from one patient to another. This is certainly an important and practical point and one which should not be overlooked.

It is true that the spark or effluve has been shown experimentally to be germicidal and to destroy well-developed cultures of the ordinary germs, still, in spite of this fact, care and cleanliness and some definite plan of sterilization must be carried out. Wiping off the tubes on a cloth or towel or simply rinsing in water is not enough. Apply the test to yourself. How would you like to be treated with a tube that had been used in contact with a specific disease and which had received no further cleansing than mere dipping in water and then being wiped off with a towel that had already done similar service an indefinite number of times?

The Care of the Tubes.

Let your technique be so careful and conscientious that you need never blame yourself for spreading contagion or infection of any kind.

Do not use the same tube for specific and non-specific orificial cases. This alone will do much toward lessening the danger of infection.

As these tubes bear heating, they may be sterilized by boiling, just as surgical instruments are sterilized. This, however, is not necessary, as immersion in strong antiseptic solutions will be sufficient.

A tube that is to be used in contact with a mucous membrane, as for instance, a vaginal or urethral electrode, should be immersed in pure carbolic acid or in pure Crethol or Benetol, before using it again.

In cases, such as acne, psoriasis, eczema, neuralgia, non-specific diseases of the urethra, rectum or vagina, etc., it will suffice if the tube is immersed for a few moments, or kept permanently when not in use, in a strong solution of any one of the three antiseptics mentioned in the preceding paragraph.

For this purpose a glass jar, large enough to hold the various electrodes, should be filled with a twenty per-cent solution of carbolic acid (*a five per-cent solution is not enough*); or as its equivalent, one of Crethol or Benetol containing a tablespoon of either to the pint of water.

An ideal way would be to have two jars, one containing the full-strength antiseptic, for the tubes employed in infectious cases, and the other for those used in non-contagious diseases.

Practically, I prefer Crethol or Benetol to carbolic acid, because they are equally satisfactory and not caustic. If any of the full-strength liquid accidentally comes in contact with the operator's hands no harm is done.

In the absence of large jars to keep the two solutions in, with the tubes constantly immersed, wide-mouthed bottles may be employed for use before and after treatment.

If the tubes are immersed in the pure antiseptic they should be thoroughly rinsed in alcohol and then in water, or in water alone, before using. From the weaker solutions water alone is necessary, but in both cases hot water is preferable.

The convenience of most of our modern office buildings makes the technique of sterilizing the tubes a simple one, but in smaller towns the physician will find it somewhat more of a task.

By sterilizing in this manner both before and after use, the tube not only receives a double sterilization, but also if it has been taken care of immediately after use, if such a thing should happen that it should be used again without remembering about sterilizing it, the danger would be slight. Furthermore, the tube is far easier sterilized immediately after using than when the secretions have dried upon it.

I have spoken of using the same care that you would with a surgi-

cal instrument, although the danger with these tubes is not as great as with surgical instruments for several reasons. In the first place, they are not employed ordinarily in a fresh wound; secondly, the danger is in carrying infection from one patient to another and not the additional danger which accompanies a surgical operation, of infecting the wound from the individual himself; and, finally, in the majority of the cases treated there is practically no serious danger of infection.

If one had a sufficient number of tubes it would be desirable to keep an individual tube for each patient. Immersion in the weaker solutions referred to above and rinsing, or even ordinary cleanliness, would be sufficient; but at the close of the course of treatments, before the tube was used for another case, it then should receive vigorous and thorough sterilization.

Some of my readers may think I am devoting too much space to this subject, but it is an important one, and my early surgical training has made me a "crank" on this point, and really, could you ever excuse yourself if through your carelessness you spread, say, a specific infection, even in one single instance?

High Frequency Burns.

Another subject on which I find no literature is high frequency burns. There is a prevalent idea among many users of high frequency currents that these currents do not burn. True, they do not produce a dermatitis comparable to that produced by the X-ray, but they are still capable of causing annoying surface burns.

It will be noted by the physician who is accustomed to handle the excited tube with his hands that after a time the skin, especially about the finger tips, feels as if he had been handling a hot dish, that had seared the outer skin. Also in giving vaginal treatments, prolonged application often results in shreds of the mucous membrane adhering to the tube when it is withdrawn. To avoid this a rule should be made never to leave the vacuum tube in contact with a mucous membrane for more than seven minutes at a time.

I have known physicians to leave them twenty minutes and I have done so myself without any harm resulting, but this is sheer luck and comparable to the man who gives twenty and thirty-minute X-ray exposures—sooner or later disaster will follow.

High frequency currents seem to have no cumulative effect in so far as burning is concerned, and treatments may be frequently repeated without apparent danger; thus three seven-minute treatments may be given in one day with intervals of three to six hours between, without any serious consequence when one twenty-minute treatment might be disastrous.

High frequency burns appear immediately; there is no interval as with the X-ray. Another use of the high frequency in which burns may

result is in the application of the spark or effleuve to a mucous membrane, as for instance, to the lip, where care and judgment must be used.

I have seen a fairly sharp application to a "cold sore" result in the formation of a large vesicle which ruptured and poured forth an incredible amount of serum and was three weeks in healing.

As a sharp spark has a cauterizing effect and is used for that purpose, it is readily inferred that the reaction just referred to is of this nature, as even a comparatively mild spark will influence a mucous membrane.

The Tube-Handle.

The vacuum tubes are made to fit into a common handle, of which there are two types, and I have reason for preferring one handle for one class of work and another for certain other diseases. For instance, the ordinary handle is one with a fixed socket, into which the tube is introduced and held firmly and rigidly in place. This form of handle is suitable where a tube is used which is applied to the face, scalp or body, and where considerable firmness is necessary.

In a number of instances, especially with applications of the tube within the various orifices of the body, the handle with the movable socket is preferable. For illustration, I will give a suggestive technique for several conditions and show the convenience of the movable socket. In giving vaginal treatments the patient is placed on her back with the knees drawn up and the feet in the stirrups. The sterilized vaginal tube is then lubricated, placed in the handle with the movable socket and inserted. When the tube is in place, bend the socket so that the tip of the handle is bent down until it touches the table, when the skirt is folded up over the end of the handle and thus the tube is absolutely secured from slipping out during the treatment. I then wrap a towel around the socket itself to prevent the tube tipping sidewise, so that the metal parts cannot come in contact with the patient, giving an unpleasant spark and shock. The patient's skirts are then drawn down over the knees, the connecting cord passed out under one leg to the apparatus and after everything is in place the current is turned on and allowed to pass for seven minutes and then turned off before the tube is removed. In this way the patient receives no shock. The tube is securely maintained in place and the patient is exposed to no exposure during the principal part of the treatment. If the handle of the fixed socket is used in these cases there is great difficulty in maintaining the tube in place.

Again, in the male urethra, if the urethral tube is introduced with the patient lying on his back, the handle with the movable socket is slipped over the end of the tube and the handle directed backward and rested on the abdomen of the patient, who steadies it with his hands during the treatment.

In using the rectal or prostatic tube, I place the patient in the Sims'

position, with the knees well drawn up, and insert the tube, using the handle with the movable socket and bend the same so that the handle is directed upward and against the patient's body. The patient then takes hold of the handle with one hand, and it is thus held in place. In this instance, particularly, this is a great advantage over the handle with the fixed socket.

When treating the eye or the ear, the use of this socket will enable the tube to be held in position by the patient without any trouble and it will also keep the hand away from any danger of contact with the cord connecting the tube to the apparatus.

Measuring the Dosage.

One problem that confronts the physician who is beginning to use high frequency currents is a method of measuring the dosage. If a man has an outfit for which he has paid twenty-five, fifty or seventy-five dollars, and which is capable of illuminating his vacuum tubes, he would hardly feel like paying as much more for a meter to measure the current used. Nothing is to be found in the literature regarding the dosage of high frequency currents, as shown by a meter, except in the case of auto-condensation.

In fact, there is some doubt in the minds of many men whether the meters designed to measure the vacuum tube output are reliable or not. For both reasons, I have sought some means of enabling me to convey to the operator a definite notion concerning the amount of current employed in treating various conditions. Such a method must take into consideration the fact that there is a multitude of different forms of apparatus, and that any measurement based on the description of a certain form of machine would be entirely useless to the owners of other forms of apparatus.

Therefore, I have made use of the length of spark which it is possible to draw from the vacuum tube, as a simple method of giving some idea of the strength of current employed. This is a very crude method and open to some serious objections, but will answer the purpose in a general way and convey a more definite idea than any method other than a meter.

With a definite amount of current passing through the apparatus there is a positive point near the tube that represents its utmost sparking distance; that is, the longest spark that can be drawn from that tube, and this will remain constant as long as the current is constant. Lessening the current shortens the spark; increasing it, lengthens it. Therefore, if I say I employ for skin diseases a tube capable of yielding a one-half or three-quarter-inch spark, I give to the physician a definite idea of the amount of current I would employ in the tube.

This does not take into consideration the sharpness of the spark, which must be adjusted in accordance with individual susceptibility.

(To be continued in the next issue.)

ABSTRACTS AND TRANSLATIONS

HYDROTHERAPY.

Effects of Baths on Menstruation.—A cold bath or sea-bathing will sometimes cause the suppression of the menses, but this does not apply to the ordinary warm bath which so many women quite erroneously consider should not be taken during the progress of a menstrual period. There is not the slightest justification for depriving oneself of this source of comfort and cleanliness. It can do no possible harm.—*Nursing Times*.

Hydrotherapy in Measles.—Hecht, in giving his experience in the use of hydiatic measures in the treatment of measles in children, says that the antipyretic effects of cold baths seem to be more marked in children up to the age of four than above this age. Poorly nourished children are more profoundly affected by the cold baths than well-developed children. He says that the antipyretic action of the bath is independent of the height of the fever and the daily temperature curve. The temperature following the treatment reaches the lowest point about fifteen minutes after the bath.—*The Prescription*.

Water Pack to Relieve Cough.—The chest pack is a most excellent measure for relieving cough. It is a pity that people do not know how much better the chest pack is than cough syrups of various kinds. Wet the hand in cold water, rub the chest until it is red, wring a towel out of cold water, so it will not drip, put it around the chest, and cover it with a flannel. If you do not happen to have a long flannel, you can use almost anything else. It is possible to make a very good chest pack out of an ordinary pair of woollen drawers by putting the body on the chest and one leg under each arm, pulling the leg up over the shoulder and down in front. Thus one can always find something convenient, even in the poorest home, which can be used to give relief by means of hydrotherapy.—*The Medical Brief*.

Indications and Contraindications for Enemas.—Prof. I. Boas (*Medizinische Klinik*) discusses the change in opinion in late years in regard to the efficacy of medicinal injections into the intestines, his view being that astringent and other medicated enemas do more harm than good and are liable to induce inflammation and aggravate the trouble. Even plain water enemas are liable to induce or aggravate mucomembranous enteritis, while all disturbances may cease when the constipation or the diarrhea is cured by dietetic measures. In cases of severe constipation, continuous irrigation with soapy water and a two-way tube, with the patient on the side or in the knee-elbow position, continuing with several quarts or until the water comes away free from feces, is the most effectual measure for severe acute or chronic coprostasis, far surpassing, Boas asserts, injections of oil, although he sometimes adds a few hundred grams of olive oil to the water. Under other conditions enemas are of little value unless the lesion is accessible in the rectum, in which case benefit may be derived from protecting powders, such as bismuth. Except with tuber-

culous or syphilitic ulcerations he has always found that the process started to heal when treated with a 5 per cent suspension of bismuth or the latter insufflated dry.

The Influence of Oxygen Baths on the Heart Dimensions and Blood Pressure.—Reporting the results of the use of oxygen baths as used at the Brieger Hydrotherapeutic Institute of the University of Berlin Fuerstenberg and Scholz (*Zeitschrift für Exp. Pathologie und Therapie*) give the details of eighteen cases treated by them.

The oxygen bath decreases the size of the heart or leaves it unchanged. In no case did it cause distension. With the use of this measure in patients suffering from organic or functional heart diseases a marked and regular diminution in the size of the heart is apparent. A definite reduction of heart enlargement was evident in two cases after ten baths had been administered, and the subjective symptoms were improved. In two cases of nervous functional cardiac affection, there was a marked shrinkage of the heart. In arteriosclerosis the reduction in the size of the heart was frequently accomplished.

Accompanying this decrease in the size of the heart there was a corresponding decrease in the pulse rate and blood pressure. It was noted that in cases in which the temperature of the bath was slightly lower than 95 deg. F. that there was a slight increase in the pressure, but the pulse rate was lessened. The authors conclude that in purely organic heart diseases the pulse and blood pressure decrease in accordance with the diminution in heart size if the oxygen baths are given at 95 deg.

The oxygen bath must not be considered an indifferent procedure. Even one bath may cause a decided reduction in the heart size with a corresponding reduction in the pulse rate and blood pressure. A series of baths may cause a material and permanent change for the better in all of these respects.

Hot Baths in Typhoid.—Every month in our exchanges we notice how positively the pendulum is swinging in a direction entirely the opposite from that which has been recently declared as the only course. Entire books have been written in favor of the Brand method of tubbing typhoid patients, with a temperature even lower than 60 degrees F., inducing cyanosis, chills, shivering, chattering of the teeth and most pronounced distress. The method has been sanctioned by the leaders in the profession, and yet has undoubtedly been productive of a great many deaths. We have advocated tepid, warm, or hot baths, and have persisted in them in spite of public sentiment. Now the "authorities" in the profession are coming to believe in the same thing. The application of cold water induces such unpleasant symptoms, that it is declared plainly unjustifiable and not what the system demands.

It is not necessary that the heat be extracted directly from the surface of the body. What is necessary is that the blood be drawn to the surface; that the superficial capillaries be dilated; that the terminal nerve filaments be stimulated, and that the activity of the sweat glands be increased. All of this is done at once by hot applications. This immediately abstracts heat and by no means increases it.

The body temperature is reduced more rapidly by this treatment than by the Brand treatment. It remains down longer, there is a lower reduction of temperature, there is no shock, no distress, but a general soothing of the nervous system, and a reduction of mortality.

This is especially applicable where the system is depressed, where cutaneous reaction is uncertain, and where the sweat glands are inactive. In all conditions of high temperature the application of moist heat or medium hot sponge baths will be found in every way desirable, as they are in every way more physiological and rational.—Editorial in *Ellingwood's Therapeutist*.

Hot and Cold Water in Eye Diseases.—Nance states in the *North American Homeopathic Journal* that the principal points in the consideration of this subject may be thus briefly summarized:

1. Heat and cold are best applied to the eye by moist pads. They are more efficacious when employed in this manner than by means of the coil or bladder, in that their action is more penetrating.

2. The application of heat is indicated in degenerative corneal processes—interstitial and phlyctenular keratitis, corneal ulcers, pannus, infected corneal wounds, hyphemia, hypopyon, suppurative panophthalmitis; in iritis and cyclitis, in muscular spasm, and in contusion and ecchymosis of the eyelids ("black-eye") to hasten absorption of extravasated blood.

3. The applications should be of the highest temperature the patient can endure, viz., 110° to 135° F.

4. They should be employed for a period of fifteen minutes, and repeated at intervals of two or three hours, for many hours.

5. Cold is indicated in hyperemia and inflammation of the conjunctiva. In traumatism, especially those of the iris and lens and in the early treatment of contusions of the lids, its employment is of value.

6. In purulent conjunctivitis, iced applications may be continually used for many hours so long as the cornea remains unimpaired, in which instance they are positively contraindicated.

7. Hot applications greatly assist the rapid absorption of various medicaments employed in ophthalmic practice, and when used for this purpose should immediately precede the instillation.

ELECTROTHERAPY.

Electricity in Gynecology.—Speaking of the value of electricity in gynecology at the recent opening of the Electro-Therapeutical Section of the Royal Society of Medicine, Dr. Samuel Sloan, of Glasgow, the president of the Section, said: "I am prepared to prove to you that more, much more, can be done with practically no drugs whatever, no tampons, no douches, little if any confinement to bed, and no messing by the patient herself; true, I have not wholly dispensed with the measures enumerated, but I am becoming less and less dependent on them, and I frequently, with the best results, dispense with them entirely, thus putting electro-therapeutics to an almost unfairly severe test."

Galvanism of the Thyroid and the Menstrual Function.—P. Galante says that there is a special relation between the diseases of the thyroid gland and the functions of the sexual organs. This is shown especially in exophthalmic goiter, in which the disease is accompanied by lack of sexual desire in the male and even impotence, and in the female by disturbances of menstruation. In the initial period of high tension there is metrorrhagia, while in the stage of cachexia amenorrhea takes its place. The author details three cases of goiter observed by himself in which these relations were well shown. These cases demonstrate the necessity of early intervention in the treatment of exophthalmic goiter in order to obtain a cure. Galvanism of the thyroid gland has a marked influence on the menstrual function. The presence of pregnancy in this disease makes it necessary to use the greatest care in the use of this treatment, since abortion may even be produced. In cases of dysmenorrhea accompanied by hyperthyroidism, galvanism of the thyroid gives surprising results. The author believes that if this treatment is used in the acute psychoses which accompany Basedow's disease and disturbances of menstruation it will have an excellent effect.—*Annali di Elettricità Medica e Terapia Fisica*.

The Value of the Faradic Battery.—Our respected friend, Dr. Finley Ellingwood, in a recent number of his live-wire journal, *Ellingwood's Therapist* (which, by the way, we heartily recommend to every reader of *PHYSIOLOGIC THERAPEUTICS*), gives some very good points regarding the faradic battery. He writes: "The introduction of complicated scientific electrical apparatus has attracted the attention of the profession entirely away from the utility of a mild faradic current generated from a simple little machine, costing from five dollars to fifteen dollars.

"During the years I was in country practice in the early eighties, I constantly carried one of these small faradic batteries in my buggy. The benefits obtained from its use was, in some cases, nothing short of miraculous. A patient had an overdose of phenacetine, and was at the point of death when I arrived. She was promptly saved by this current alone. Another patient suffering from a severe attack of acute inflammatory rheumatism, developed the most violent heart symptoms early one morning. I rushed to the home after quite a long drive, and with my battery, placing the feet in a bowl of hot water which contained one electrode, I passed the other over the chest with but little attention to the strength of the current. Relief began almost from the first. I left the battery to be applied in the evening and used it myself the next morning, and on consecutive mornings, with results that I am confident could not have been obtained by other means.

"A woman after a confinement had a miserable getting-up, suffering from sub-involution, with pelvic engorgement, and a long train of disagreeable symptoms. This was the first time I had ever known of electricity being used for its immediate effects in producing uterine contractions. The first application relieved her entirely from all unpleasant symptoms, and a most satisfactory restoration was accomplished in a short time. I reported this case as one of sub-involution,

cured by the faradic current, in the *Medical Record* in 1881. I am confident that many physicians are missing a great deal by not using the simple faradic current. I have continued its use, having patients to-day that are depending upon a little battery that costs less than seven dollars, with excellent results."

RADIOTHERAPY.

The X-Ray in Nervous Itching.—H. E. Schmidt, in the *Berl. Klin. Wochenschrift*, recommends exposure to the x-ray in neurotic dermatoses. The effects occur after a few days, and last from three to six weeks, and often for months and years.

X-Ray Diagnosis of Gastric Cancer.—Two cases of gastric cancer diagnosed by the x-ray are reported by Lange in the *Journal A. M. A.* In one the diagnosis was verified by operation. Operation was refused in the other but the skiagram was identical with that in the previous case and the patient died six months later with every evidence of the disease. Lange thinks that the x-ray will be an important and frequently a determining factor in the early diagnosis of gastric cancer. The lack of other early constant and positive clinical signs renders this method so much the more important.

X-Ray Treatment of Nævus.—Schmidt, after reporting two cases, concludes that vascular nævi may be cured by the x-ray. There is no fundamental difference between the action of the x-rays and radium upon vascular new growths. The x-ray has the advantage that a larger area may be treated at one sitting. Among the unpleasant complications of both the x-ray and radium treatments should be mentioned the subsequent formation of pigmented patches and telangiectases. This, however, may be absolutely prevented if the erythema-forming dose is not surpassed at any one sitting, and if the next treatment is not begun until this has completely healed. Shallow nævi may be cured without scar formation; angioma only with a scar. Electrolysis and the Finsen light are of avail only with very small angiomata and shallow nævi. In all large flat nævi, and especially in tumor-forming nævi, the x-ray is indicated.—*Medical Record*.

X-Ray for Excessive Perspiration.—A. Howard Pirie, chief assistant in the X-Ray Department of St. Bartholomew's Hospital, London, gives an account of his successful experience in four cases of excessive perspiration. In each patient the sweating began in the morning after breakfast, and kept on badly all day, till by 5 p. m., they were forced to change all their clothes about the armpit. The perspiration soaked the coat about the arm-pit, caused a "high-water mark"—as one patient called it when it dried—and so discolored and destroyed it that a coat could not be worn longer than three months. Driving in a cold wind, or getting chilled, brought on the perspiration very badly. After 5 or 6 p. m., the perspiration would cease for the day, unless any worry or anxiety kept it up during the evening. In bed the perspiration completely stopped, and the patients were comfortable till next morning, when it began again after breakfast.

The treatment consisted of four applications of x-rays to each armpit. The applications were made at intervals of one month, and were the largest applications that the skin would stand at each sitting. The dose was measured by two independent methods—Sabouraud's pastilles and Pirie's own meter. The armpit was divided into two areas, and each area was treated separately. This was to ensure that every part of the armpit received an equal dose. After two applications the patients began to notice an improvement, and after the fourth the armpit remained dry all day.

The X-Ray in Cystitis and Lumbago.—Wilbur G. Hamlin, in *The Medical Standard* (March, 1910), reports several interesting cases. He writes: "Some months ago I had under my care a case of cystitis which resisted all that I could do for her. Internal medication, diet and local antiseptic injections seemed futile. The urinalysis showed a mixed infection, but no gonococci. The patient was losing patience and something had to be done. As a sort of a last resort I used the x-ray. A high tube was used for five minutes.

"It happened that this lady lived fifty miles or more from town and circumstances prevented her from coming in again for twelve days. Inquiry elicited the information that she had had no more trouble until early that morning, and then only slight distress before urination. A second analysis was made and the number of bacteria was very markedly diminished. A second x-ray treatment resulted in a complete cure, or so I am inclined to believe, as five months have passed since the last treatment was given and there is no return of the old trouble.

"A case of lumbago which came to me had resisted the usual rheumatic remedies, massage and hydrotherapy, and electrical treatments. Investigation showed a very bad intestinal condition with autotoxemia. The fecal examination showed a generally disturbed condition of the bowel functions with large numbers of gram-staining bacteria. I reasoned that the lumbago was a reflex condition due to the intestinal irritation. Exposure for eight minutes every other day three times resulted in a complete disappearance of the lumbago, and a noticeable improvement in the general condition. In this case a high tube was also used."

DIETETICS.

Olive Oil in Hyperchlorhydria.—The part played by the gastric mucus is that of protecting the walls against the gastric juice. Schali, when the secretion of mucus is arrested, gives olive oil and almond oil. The oil is taken neat before meals, beginning with a dose of 1 c.c. (17 minims), and increasing by degrees to 15 c.c. (half an ounce). The treatment has the additional advantage of decreasing the acidity of the contents of the stomach.—*Archives des maladies de l'appareil digestif*.

Diet in Typhoid Fever.—Dr. Warren Coleman, after a study of forty-six cases, finds it absolutely necessary to supply food enough to cover the patient's energy expenditures. He considers that the

amount of food necessary should be based on forty calories per kilogramme of body weight each day. The diet that he recommends consists chiefly of milk, cream, milk-sugar and eggs, with a small quantity of stale bread or toast, and as much butter as the patient desires. Each day there should be given one and a half quarts of milk, from one to two pints of cream, one-half to two-thirds pound of a pound of milksugar, and from three to six eggs.—*N. Y. Medical Times*.

The Value of Buttermilk.—Many writers are advocating the use of buttermilk instead of sweet milk as a nutriment in protracted fevers, and some have become enthusiastic in its use in feeding infants. The arguments in favor of its influence in increasing one's years and prolonging life have been many, during the past two or three years. There is no doubt that this agent is a most valuable one, as a fermentation does not readily take place from it, and its nutritive properties are high, these arguments are also in its favor. But its characteristic acid properties are also of great advantage. One writer says that after fourteen years of anxiety while feeding sweet milk he had six years of perfect satisfaction in the use of buttermilk instead, and this makes him confident that if indifferent readers would give buttermilk a thorough trial they would full agree with him.—*Ellingwood's Therapeutist*.

Diet in Kidney Diseases.—At a meeting of the Academy of Medicine, held on March 1st, a communication on the subject of diet in diseases of the kidneys was made by M. Linossier and M. Lemoine. Experiments carried out by them showed that all albuminoid substances of animal origin, if injected under the skin, gave rise to albuminuria and renal lesions. The explanation of the harmlessness of these substances when taken as ordinary articles of food was that their toxicity was destroyed when they were disintegrated by the gastric juice, but the toxic properties would become manifest if from any cause there was impairment of the digestive or renal functions. Patients suffering from diseases of the kidney should, therefore, avoid the use of albuminoid substances of animal origin unless well cooked. Meat ought never to be underdone; beef had a toxic action when insufficiently cooked; veal was preferable to beef, because it was always thoroughly cooked. In cooking eggs the white ought always to be coagulated. Uncooked milk might cause kidney trouble if it was imperfectly digested, and when patients suffering from albuminuria were placed on milk diet the milk ought to be boiled, especially if their stomachs were out of order.—Paris correspondent of the *Lancet* (March 26, 1910).

The Diet of Chinese Soldiers.—Tsui, in his remarks at the eighteenth annual meeting of the Association of Military Surgeons, reported in *The Military Surgeon*, states that the average Chinese soldier is recruited from the country laborers, whose daily diet consists of barley, maize, or wheat, and vegetables cooked with some bean oil. Meat is not taken oftener than once or twice in the month; and, yet, it is well known that the northern Chinese possess a finer physique and are capable of greater exertion than many of those where a

meat diet figures prominently. The Chinese soldier receives an allowance of one and one-third pounds of rice, together with one-half pound of fresh vegetables and two ounces of salt vegetables or bean curd daily. The vegetables are of different kinds, that is, cucumbers, turnips, beans, peas, marrow in summer, and a species of cheap cabbage in autumn and winter. He is allowed meat, usually pork but sometimes mutton or beef, twice a month only. There are two meals daily in autumn and winter, and three in spring and summer. The soldiers seem to be able to perform their duties satisfactorily, with very little sickness. The attendance at the military hospital is at the rate of five *per mille* daily. Rheumatism is common, and, together with skin diseases, covers about one-half of the total admissions. Ailments of the alimentary canal and respiratory tracts come next. The death rate is two *per mille* yearly. Infectious diseases are rare in the army, typhoid being the commonest. Beri beri does not occur.

The Value and Limitations of Salt-Free Diet in Nephritis.—Victor C. Vaughan (*Journal A. M. A.*) says that in withholding salts from nephritic patients we are not withholding the direct cause of uremia but we may protect the kidneys by decreasing to a certain extent their labor and thus conserve their capacity as organs of elimination. Any inorganic salt in excess of that needed in the processes of metabolism acts as an irritant and increases unnecessarily the stress of work thrown upon the kidneys, and it is important that this should be avoided, especially where the kidneys are diseased.

Doctor Vaughan contends, and quotes experiments to sustain his contention, that a too nearly salt-free diet is inclined to disturb the health of the normal individual. The average individual requires about six grams per day. He shows, furthermore, that Wiedal's contention, that edema was due to retention of chlorids, has not been wholly borne out. It seems, especially in acute nephritis, to be due to the effect of the poisons on the vessel walls. In many cases of chronic nephritis it is due to the disturbance of circulation and is best combated by agents directed to these causes. In certain cases of chronic parenchymatous nephritis the edema is markedly influenced by the quantity of salt in the food and in these and in the so-called "prenephritics" seems to be its greatest field of usefulness. He thinks that the most of us take too much salt. It seems rational to limit the fluid intake in nephritis, especially where there is a tendency to edema, but nothing is gained by carrying this out to the distress of the patient.

MISCELLANEOUS.

Scarlet Fever Prophylaxis with Streptococcus Vaccine.—Smith, in *Boston M. & S. Jour.* (February 24, 1910), concludes from the published accounts that the streptococcus vaccines, used as advocated by Gabritschewsky, have some influence in controlling epidemics of scarlet fever. Their use, with proper care, is attended by no harmful results. They should be given a wider application in this country.

Earache.—Hot steam or smoke funneled into the ear usually affords a measure of relief. As a rule it is best not to drop warm oils into the ear, for these occlude the ear and often show a tendency to become rancid. Syringing the ear with warm water ameliorates the pain. Moist heat applied externally affords more relief than dry heat or the hot water bottle.

Sunlight in Deep Burns.—That focussed sunlight is an excellent application for deep burns has been proved many times in practice. It is soothing and healing. In short, if any ulcer is healable, sunlight properly focussed and applied will heal it. All degrees of strength are useful, from the strongest cauterant to the gentlest warmth that can be appreciated by the patient, the character of the application depending upon the judgment of the physician.—Webster.

The Treatment of "Port Wine" Nevus with Light and Radium.—Kromayer, of Berlin, in *Deutsche Medizinische Wochenschrift* (February 17, 1910), reports the results of the treatment of forty cases. Of these cases of varying sizes and in different situations on the face and neck only a very few remained unaffected by this therapy; the remainder show more or less improvement. The light treatment employed was the quartz lamp of Kromayer and the best results were obtained by combining the treatment with radium. Neither treatment should be applied more than four or five times for fear of the development of a chronic inflammation of the skin or of telangiectases. In some of the cases the improvement of the disease was so marked that only small islands of discolored skin remained; in most of the cases the patient were satisfied by the improvement in their appearance.

Plastic Massage in Facial Dermatoses.—Leroy states, in *Gazette Medicale de Paris*, that massage of the skin of the face, even by unskilled hands, is of value in lessening dermatoses of the face. Associated with diet, it constitutes a valuable and easy method of treatment. Each sitting produces a marked congestion of the skin, with a local elevation of temperature and the papules become more prominent. This soon passes away, and the opposite effects result; there is a retraction of the papules, and whitening of the skin, with a pleasant feeling. The indications for massage are all those conditions in which there is poor circulation. Digestive erythemata, acne, melano-derma, facial obesity, chloasma, and seborrheic eczema are among them. Acne is especially benefited by it; the papules become smaller and pustules cease to suppurate; in the cicatricial forms, the new papules evolute without producing cicatrices.

Hot Mud Compresses in Chronic Pelvic Inflammations and Exudates.—Cukor, in *Gynäkologische Rundschau*, advocates the use of hot mud compresses over the abdomen in exudative inflammations of the pelvis and adnexa. The mud is heated much more slowly than water, and cools much less quickly. The heat is much better borne by the patient than in hot water applications, and about 10 degrees greater heat can be applied in this way. The particular mud used is the result of the decay of plants for thousands of years, and is a

non-conductor of heat. If the surface is covered with woolen cloths, the heat will be retained for several hours. The effects of the application are hyperæmia, dilatation of the pelvic blood vessels, and on account of the weight of the mud pressing out the blood from the vessels, and the transudation of leucocytes and phagocytes, the removal of exudative material. The treatment is contraindicated in acute cases with fever and pus formation. The applications may be made conveniently by the patient at her own home while lying down. The greater temperature that can be applied and the less perspiration that is caused, make this treatment superior to hot air applications.

The Field of Carbon Dioxide Snow.—In affections of the skin it has a wider range of usefulness than the x-ray, it will do more, and with greater certainty. We now use the solid carbon dioxide successfully in birthmarks of every variety and of all sizes; in port wine stains and angiomas, superficial and deep; in pigmentary, hairy, and hypertrophic congenital deformities of all kinds, and even in the cavernous angiomas. In leucoplakia and precancerous keratoses it has given us better results than any other method; and I know of no way so good to remove the warty and possibly degenerating growths that are not uncommon on the hands of x-ray workers. Rodent ulcer and superficial epithelioma can be apparently cured; and I say "apparently" advisedly, in view of our experiences with radiotherapy in this field. Its effectiveness in deeper infiltrating cancer of the skin is still *sub judice*; and the same is true of keloid and lupus vulgaris. It is entirely successful in the removal of senile warts, papillomata, and other smaller tumors of the skin. Gunpowder stains and other imbedments of foreign matter in the skin can be removed by it; and in lupus erythematosus it is now our method of election.—W. S. Gottheil, in *N. Y. State Journal of Medicine*.

The Present Status of Vaccine Therapy.—W. Tileston, in the *Boston Med. and Surg. Jour.* (March 24, 1910), speaks of the value of prophylaxis with the vaccine therapy, and then discusses its use in localized infections. He says of vaccines that they will not and could not be expected to cure all cases, for they depend for their effect on a responsive power on the part of the patient. If this is lacking, no benefit can result. Moreover, the vaccine, if it is to be of use, must contain the organism which is causing the disease process. The practice of injecting dead bacteria of all sorts and frequently a mixture of various bacteria in all sorts of conditions with the hope that by some lucky chance the right organism might be hit upon, cannot too strongly be deprecated, for it is calculated to cast discredit on vaccine methods. To sum up the present situation, in certain localized infections, particularly those due to the staphylococcus and to the tubercle bacillus, vaccine therapy has clearly proved its worth and stands on firm ground. In general infections it has not thus far shown results which are distinctly better than those obtained with other forms of treatment. There can be no doubt that there is going to be improvement in the methods of preparing vaccines and in the principles governing their administration. Vaccine therapy is still young and we may expect much improvement in the future. The field of immunity is very fertile and is being assiduously cultivated.

Ultra-Violet Rays.—The experiments of Prof. R. W. Wood, of Johns Hopkins, with ultra-violet rays, recorded in *The Century Magazine* (February, 1910), are of interest to the practical physician. He finds if our eyes were sensitive only to these rays, many white objects would appear black, our windows would be as opaque as sheets of iron, and polished silver would resemble anthracite coal. Things appear as they do merely from the fact that in the process of evolution our eyes have developed a sensibility to a certain region of the total spectrum of the light which comes from the sun. To photograph with the ultra-violet rays, it was necessary to employ a lens cut from crystal of quartz. Over this was deposited a thin film of metallic silver, to prevent the passage of all visible rays. The photograph of a man taken in bright sunlight shows no shadow, owing to the fact that the ultra-violet rays are rapidly scattered by the atmosphere. With the ultra-red rays the shadows are very intense. Owing to the inability of the ultra-violet rays to traverse glass, one whose eyes were only sensitive to these rays would be in absolute darkness in a room with the windows closed. The so-called Finsen ray is merely this ultra-violet light. Arc lights, especially when made with iron electrodes in place of the carbon ones, pour out a perfect torrent of these radiations, and produce sunburn in a few minutes. If it is the ultra-violet rays that produce the beneficial effects of sunlight in consumption, life in the open air is more beneficial than in "glassed in" sun-parlors.—*Lancet Clinic*.

The Effects of Alcohol.—Henry J. Berkley, in the *Johns Hopkins Hospital Bulletin*, thus summarizes the results of introducing alcohol into the system:

A moderate dose causes a drop of 15 to 20 beats in the pulse rate and produces muscular lassitude and mental confusion.

The continued use of a moderate amount of alcohol produces fatty changes in the heart and blood-vessels, digestive disturbances, and mental impairment.

Later on there is a profound loss of memory; also delusions, loss of sensation in the skin, and loss of deep reflexes.

Taken in large amounts, alcohol results in great depression of the heart, complete loss of sensation in the skin, rapid dementia, and death from syncope.

The following account of the microscopical changes in the tissues as a result of alcohol is taken from observations on animals:

1. The most marked effects are produced on the blood-vessels.
2. The cells which line the vessels are swollen and broken and there are serious retrograde changes in all of the tissues. The white blood cells become swollen and necrotic.
3. The lymph spaces become choked with broken-down white blood-cells, and the small blood-vessels are also completely blocked by plugs in detritus and dead tissue.
4. In the veins the blocking is often so severe that the vessels burst from the backing up of blood in them.

The changes are always more marked in the vessels of the brain than elsewhere because they do not possess the special nerves which control their caliber, as do the vessels of other parts of the body.

Bier's Cup in Infections of the Breast.—Abscess formation in the breast following mastitis, and the very serious consequences for the child resulting from interruption of nursing, likewise the atrophy of the breast arising from a sclerous process of cicatrization, are well known, and, consequently, prophylactic measures against these infections have been carefully studied; likewise energetic and early treatment to combat the initial infection, in order to avoid the progress of the lymphangitis which so frequently results in abscess.

Bier's method applied to the treatment of these inflammatory processes has appeared to Mesnard a therapeutic measure of the highest value. The treatment consists in applying, as soon as the initial symptoms of the lymphangitis make their appearance, a large cup over the inflamed gland for ten minutes three or four times daily.

From histologic examinations and experimental work it would seem that the passive hyperemia acts on the infections of the breast by mechanically slowing the circulation and also facilitating the trans-vascular migration of the leucocytes and extravasation of the blood serum. It thus brings a larger number of leucocytes into the infected territory, which wage war more victoriously against the pathogenic microbes. It also facilitates the reaction of defense of the organism and sets up a cell proliferation which encapsulates, so to speak, the infectious focus. In addition, Bier's method appears to realize a rapid procedure for removing the morbid intracanalicular exudates which results in a sterilization of the involved area.

This treatment gives constant success upon the condition that it is applied as soon as the infection makes itself evident, that is to say, when the lymphangitis or galactophoritis are in their early stages, before the glandular culs-de-sac or the surrounding tissues have become invaded. Under these circumstances the pain rapidly disappears, the tumefaction diminishes and the glands retain intact their essential anatomic elements so that nursing may be resumed very shortly.—Editorial in *N. Y. Med. Jour.*

Corsets from a Surgical Standpoint.—A corset properly constructed and adjusted, instead of being a hindrance to proper freedom and movement or a menace to health, is not only a decided advantage, but is of great aid in correcting malformations of the figure or displacement of the viscera, and by such correction of abnormal conditions acts as a positive therapeutic agent of great value. The corset must be made to fit the figure, not the figure to fit the corset. This does not mean that the errors of position or figure, for which a woman herself is responsible as a result of habit, are to be condoned or allowance made for them in fitting the garment, but that these conditions are corrected with the wearing of the proper corset.

Nephroptosis and the distressing symptoms often resulting therefrom are greatly relieved, and the symptoms are made almost, if not quite, to disappear by the front-lace corset with the addition of a properly-fitted pad to produce support where needed.

It is possible to do infinitely more with such a contrivance than can be accomplished by the use of bands. The patient should be instructed in regard to the proper application of the garment, which should be put on before rising, thus preventing the possibility of

strangulation. A slight elevation of the hips by means of a pillow will, in extreme cases, make the adjustment and application of the corset of greater value.

Gastropnoxis and enteroptosis, with their accompanying symptoms, pain, dragging-down sensation and gas formation, are amenable to the same relief from the same source. In these conditions also the properly adjusted pad securely fastened to the corset, to avoid the possibility of its being displaced, has been found of great value.

A corset constructed and applied as in the old style could not but be a positive menace to health and a detriment in every way. Its hour-glass construction of the waist, pushing the soft, yielding abdominal organs both up and down, thus producing injurious pressure on heart and lungs and on bladder and uterus (the latter pressure aided and augmented by the down-pull of tense garters) was truly an instrument of torture; and not only was it injurious to health, but it failed to give grace, beauty and symmetry to the form and deserved to be discontinued.

In conclusion we might summarize as follows:

First. The corset is a necessary article, and if properly constructed is a benefit from a standpoint of health and appearance of the wearer.

Second. Proper construction depends upon the application of the principle upon which the human figure is built—i. e., a rigid, firm back from which, as a support, the anterior portion is flexible and easily adapted to change of position.

Third. A front-lace corset embodies these features, as well as those of ease, of application and readjustment.

Fourth. A corset may be of great aid to the surgeon when applied with intelligence and proper appreciation of its principle of construction and the application of that principle to pathological conditions.—*Am. Jour. Clin. Medicine*, April, 1910.

The Treatment of Chronic Constipation.—J. Russell Verbrycke, Jr., of Washington, D. C., in discussing the treatment of chronic constipation (*Medical Record*, March 12, 1910), briefly considers diet, the institution of correct habits in regard to the time of going to stool, water drinking and exercise, all of which are usually essential in every case and various procedures, one or more of which may usually be employed advantageously, as irrigations, baths, massage, vibration and electricity.

It should be insisted upon that the patient go to the closet at a certain time each day, preferably just after breakfast, whether he have the desire or not. The mind should be concentrated for at least five minutes upon having a movement, and should not be occupied by other matters, as in the habit of reading at stool. If an evacuation does not result, no further attempts should be made, unless there is a distinct desire, until the following day at the same time. Impress the patient with the efficacy of this, as the results of concentration of the mind are quite remarkable. To show how easily habits are formed in many cases, I will relate the instance of a man I know, who used to have several movements a day. It was inconvenient, so he disregarded as far as possible all sensations coming

at other times than after breakfast, with the result, in a couple of weeks, of having the desire only at that time. Later he tried, as an experiment, to see if he could produce two movements a day at will, and found, on going to stool morning and evening for a week, the desire came at these times.

The diet in simple chronic constipation is not rigid. Usually too much of the following should be barred: proteins leaving little residue, dry foods, eggs, thick soups. Forbid strong tea, cocoa, chocolate, huckleberries and anything else which contains tannic acid. Plenty of the following foods, which are somewhat laxative, are to be eaten: oatmeal, cornmeal, buttermilk, cream, butter, olive oil, maple syrup, molasses and nearly all the fruits, raw and cooked, except bananas, huckleberries and gooseberries. As a rule it is only necessary, in arranging the diet, to take out the most indigestible things the patient has been eating and add the laxative fruits, oatmeal, etc., in sufficient quantities. If the patient has been gluttonous and the bowel has been dilated, restrict the amount of vegetables containing cellulose. But if, as is usual, not enough food containing residue has been eaten, give a diet containing both meat and vegetables with the latter, and fruits in preponderance.

Of nearly equal importance is the frequent drinking of cold water, in small amounts. For its tonic and stimulating effect a glassful should be taken every morning immediately on awakening and a half glass at intervals during the day.

Outdoor exercise when possible should be recommended. It will not only serve to improve the general condition and nerve tone, but will strengthen, among others, the muscles entering into the act of defecation. Walking or any of the mild sports are beneficial. If business or other reasons prevent this, ten or fifteen minutes, morning and evening, devoted to indoor physical exercise will help to take its place. When exercising the window must be open and deep breaths be taken.

A cold sponge bath in the morning, followed by a brisk rub, is a great stimulant. For those who can stand it a cold plunge may be substituted.

Usually all of the preceding lines of treatment are to be instituted with or without the addition of one or more of the procedures about to be mentioned. Deep abdominal massage in the morning before breakfast often does good, or the same result may be obtained by rolling a croquet ball over the course of the colon for five minutes before going to stool. Vibration by a mechanical vibrator or faradic electricity with slow interruptions are useful. Oil enemata of 6 ounces of olive oil may be given at night, to be retained and passed the next morning, when a movement will usually result. Or, again, small cold water injections, 65° to 75°, powerfully stimulate the musculature of the intestines. It is occasionally necessary to clear the bowel out by a purge in some cases, but this should not be repeated any oftener than is absolutely necessary.

As regularity becomes established the artificial aids should gradually be discontinued, the diet and personal hygiene still being observed to make the improvement permanent. A course of several weeks or months of judicious treatment is usually followed by the most encouraging results.

REPRINTED ARTICLES

SOME POINTS IN THE TREATMENT OF AMEBIC ULCERATION OF THE LARGE INTESTINE.

BY A. B. COOKE, M. D., NASHVILLE, TENN.

The general treatment of amebic ulceration includes (1) rest, (2) diet, (3) hygienic and sanitary measures and (4) medication by the mouth.

1. Rest is always of great importance. Ordinarily, time will be saved by confining the patient strictly to bed until control of the disease has been established. This may require only a few days or several weeks, depending on the severity of the case, but treatment will be far more promptly effective than if the patient continues on his feet.

2. Diet is also a matter of importance. For a few days it may be well to restrict it to liquids given in small or moderate quantities at frequent intervals. I am convinced, however, that serious error is often committed in this connection. These patients usually come to us weak, emaciated and semi-starved from their own efforts at dieting, and one of the urgent indications is to give them nourishment as soon and as rapidly as possible. This can generally be done even in severe cases much earlier than is customary by devoting due care and attention to the subject. In addition to the predigested foods, peptonized milk, junket, etc., it has been my observation that in the majority of cases thoroughly browned toast, juice expressed from fresh beef, and soft boiled eggs are well borne. Fruits, sweets and all but the simplest foods should be withheld.

3. As for hygienic and sanitary measures, the former refer to the patient himself, and include fresh air, sunshine, cheerful surroundings, etc. In obstinate cases a change of climate may be helpful through its effect on the general health. Sanitary measures refer more particularly to the protection of the patient's family and community. The nurse or attendant should be given explicit instructions as to destroying all discharges from the bowel, and also as to the proper cleansing of his hands after waiting on the patient. The infectious agent is probably, in the main, water-borne, and the danger of contaminating the water supply should be fully explained to all concerned.

4. With the large majority of clinicians, irrigations constitute the main dependence of treatment. A wide diversity of opinion exists as to the most effective solution, one man advocating one kind, another another. Personally, I believe that the effectiveness of irrigations depends rather on the mechanical cleansing action of the solution than on any medicinal agent it may contain. And I believe also that failure to cure every patient by this method of treatment is due alone to inability to reach all infected portions of the bowel with the solution.

The intolerance of the rectum, due to the local inflammation and tenesmus, renders it impossible in many cases, even with the aid of posture, to force the fluid into the higher portions of the intestine. The only means by which this difficulty can be overcome is the intro-

duction of the colon tube. In spite of emphatic claims to the contrary, this is a most difficult feat as ordinarily attempted, the tube curling on itself in the rectum, thus leading to a misapprehension as to the height it has reached. By placing the patient in the knee-chest or inverted posture and passing the six-inch proctoscope, the manipulation is rendered both easy and accurate, the tube being introduced through the proctoscope well into the sigmoid and the latter then withdrawn. At first the irrigations should be used daily or twice a day, not less than half a gallon of the solution being carried into the bowel before any portion of it is allowed to return. Later, as the patient improves, every other day or twice a week will be often enough, but the treatment should not be entirely discontinued for some weeks at least after the cure seems complete.

In some cases it is not impossible to irrigate the colon completely with no other tube than the ordinary two-inch syringe nozzle, provided the rectum is first given careful attention and the proper posture of the patient is secured.—Abstracted from *The Journal A. M. A.*, Feb. 19, 1910.

THE DIETETIC TREATMENT OF NEURASTHENIA.

BY JOSEPH A. DENKINGER, M. D., JAMAICA PLAINS, MASS.

The keynote underlying all treatment is rest and diet, with removal (if possible) of the exciting cause of the trouble.

The treatment in brief is:

1. Absolute body rest.
2. An abundant, nourishing diet.
3. Mental rest, or what is better sometimes, mental diversion (change of environment). Mental labor and mental excitement generally must be strictly forbidden.

The above requirements are fairly well met by the Dr. S. Weir Mitchell rest and diet cure, which consists largely over-feeding the patient with a nutritious, assimilable, but non-irritating diet at frequent intervals. The best results of this *cure*, especially in serious cases, are obtained when the patient is sent to an institution, removed from sympathizing friends and relatives, where absolute rest can be enforced, and where massage, electricity and hydrotherapy can be scientifically administered if found necessary.

If institution treatment is for any reason impractical, the removal of the patient to the country, especially to the natural, care-free life of the woods, but with the hardships of camp life eliminated, and a generous dietary, will frequently work wonders.

For persons not liable to seasickness, a long sea voyage on a slow-going vessel with a good cuisine, with some one to see to it that the patient receives suitable food and an abundance of it, is also commendable.

The rest and diet cure should last from two to three months.

The great principle underlying the dietetic treatment of neurasthenia is to give the patient all the nourishment that he can *be made to take, digest and assimilate*, without unduly overtaxing digestion. Food should be administered at brief intervals, say every two or three hours. For the first few days the patient should not be allowed to leave his bed. The basis of the diet devised by Dr. Mitchell

is milk. A beginning is made with three or four ounces of milk every two or three hours; after a few days the amount is gradually increased until two, or even three, quarts of milk are consumed every twenty-four hours. If possible, the patient is kept for the first week or two on an exclusive milk diet, after which period a poached egg or a chop is added, followed the next day by the addition of bread and butter to the egg or chop. This increase is kept up until the patient is taking three good meals per day in addition to his two quarts of milk per day.

The results of this treatment are, in the main, satisfactory; there are, however, a number of objections to the exclusive milk diet as advocated by Dr. Mitchell. For one thing, many patients very early in the treatment acquired violent and unconquerable dislike to the exclusive milk diet and will not submit to it; then, again, the ingestion of large quantities of liquid proves injurious in many cases.

An exclusive milk diet is now considered unnecessary by a number of leading authorities, who advocate a more or less mixed diet from the start, in which milk, however, forms a large part. The results achieved with the *modified* milk diet have been highly satisfactory to patients and physician alike.

In the main, fats and carbohydrates should predominate in the diet of the neurasthenic, only sufficient proteid should be given to meet the nitrogenous demands of the system. The diet should consist chiefly of milk, eggs, cereals, vegetables and fresh fruits, but little meat; in severe cases it is best to eliminate meat altogether from the diet, experience having shown that a milk-egg-cereal-vegetable diet is less irritating to the nervous system than a diet rich in animal food.

Fat is of much value, and the yolk of eggs, cream, butter, etc., should be freely used.

Coffee, tea, alcoholics, tobacco and meat extracts should be rigidly excluded, as they act as irritants to the nervous system and increase the nervousness of the patient.—Abstracted from *Jour. of Therapeutics and Dietetics*.

PAIN RELIEVED BY MANUAL THERAPY.

BY E. C. THOMPSON, M. D., BOSTON, MASS.

One of the most important points in the treatment of disease is the relief of pain, and it is most frequently this symptom that causes a patient to seek the aid of a physician. Very little is known of the actual causation of pain or of individual susceptibility. It varies in intensity, occasionally causing death, but we generally judge of its severity by the countenance, the attending functional disturbances and the word of the sufferer. We find many cases that show no lesion that will produce pain, in spite of the most careful examination to discover any condition that will corroborate the patient's statement.

Pain may arise in any structure of the body, and may be roughly classified into inflammatory and non-inflammatory, and these may again be subdivided into functional, articular, vascular, nervous and mechanical. Many cases will show a combination of these causes, but as a

rule it is not difficult to place any pain in one or other of the divisions just mentioned.

Now, as to the different means of relieving pain (apart from surgical work), the following are the most common:

First, drugs internally, as morphine, etc.

Second, drugs externally, in lotions and liniments, etc.

Third, mechanical means, as water and electricity.

Fourth, manipulation.

It is this last form of treatment I wish to explain fully and show what results can be obtained from it, as most authors do not freely advocate or fully describe it in their works.

The subject is an old one, dating back from the earliest times of the ancient Greeks and Romans, who used the hands as a means of relieving the pain of a bruise, a strained tendon or a tired-out muscle. The old philosophers and founders of the art of medicine, including Hippocrates, Plato and Celsus, all advocated friction as a means to combat pain. But it is to the workers of more recent times that we owe our knowledge of today, viz., Sydenham, Grosvenor, Ling and Roth. These men were the founders of our present system of medical gymnastics, manual and physical therapy. During the latter part of the nineteenth century manual therapy was extensively practiced in Holland by Metzer; in Germany by Zabłudowski, Mozengeil and Schieber; in England by Murrell, Eccles and Brunton; in the United States by Graham and Mitchell, and in Sweden by Nordstrom and Ostrom. In addition to these, numerous writers of today uphold the manual treatment, as well as the mechanical apparatus of Zander and others.

Dr. E. F. Cyriax, in the demonstration of Kellgren's manual treatment, has used manipulation and exercises more widely than any other physician. His treatment of typhoid, the eruptive fevers, whooping cough, diphtheria and cerebrospinal meningitis show certain favorable results and might at times be used to advantage. His methods are somewhat different from those used today, being confined chiefly to friction, vibration and postural exercises.

In taking a wide view of the subject we find that manual therapy has at one time or another been used on every organ of the body and for nearly every disease, and that in many cases the beneficial results obtained far exceed those of any other form of treatment. In sprains, bruises and fractures, manual treatment has proved its value, relieving the dull, aching pain which usually accompanies these injuries. The cessation from pain is most marked, giving many hours of comfort, which cannot be obtained in any other way.

Acute multiple arthritis is a disease which lends itself most readily to massage, in spite of what other writers may say in regard to forcing or driving the disease to other points. Careful manipulation of the most swollen and tender joint beginning above the joint should very soon relieve the pain, lessen the swelling and allow the limb to be moved, whereas before the slightest movement would cause the most excruciating pain. This method can easily be demonstrated by taking the knee and ankle of one limb for treatment, while the other similarly affected is treated by the usual orthodox remedies. Here the value of massage is seen from the first application.

Gonorrheal arthritis in the same way can obtain great benefit from massage if the effusion is non-purulent and the joints to be operated on are carefully chosen.

Myalgia and lumbago should always receive massage from the first, and very often will need no other form of treatment. The myositic deposits so often found in these cases can be promptly removed by massage, relieving in a few treatments pain that may have existed for months or years.

The pain in neuritis, sciatica and in many of the neuralgias can at times receive great benefit from massage, but cases will be found to tax the ingenuity of the operator. In these some defect is usually to be found in the muscular or vascular systems, together with some limitation of joint or functional movement, which will be our guide as to the means to be employed.

The beneficial effects of massage in neurasthenia has been clearly shown by Dr. S. W. Mitchell and needs no further mention.

In addition to the above, the operator will be rewarded and very often agreeably surprised by the effects of massage for the relief of pain in frost-bite, intestinal colic, flat foot, cramps, erythema nodosum and locomotor ataxia.

It is impossible to describe on paper the different methods used to obtain the above results, as the manipulations vary in each case and require to be altered and adapted according to the position and kind of pain and to the functional disability incurred.

The chief work falls on the thumb and finger tips, the palmar surface of the fingers and the thenar and hypothenar eminences. The movements (always concentric) vary from the lightest effleurage to the most thorough petrissage and tapotement, followed frequently by active, passive, assistive and resistive movements, or various combinations. All these manipulations should never cause any pain in their application, but should be followed by relief of pain or tension and a general feeling of lightness and well being. On the other hand, too rough or violent manipulation will defeat the object in view and cause increased pain, bruising and general aggravation of existing symptoms.

Any case should receive the care and attention which would be given a surgical operation, such as preparation of the hands, condition of the skin surface to be treated, temperature of room and position of patient.

The physiological facts evolved from massage are increased elimination, vascularity and metabolism, absorption of infiltrations and exudations; improved nutrition; relief of congestion and sedative effect on nervous system. In addition to these, adhesions are attenuated, stretched and sometimes broken down.

In conclusion I would say that manual therapy should be much more extensively used, that it opens up a wide field of investigation, not only for the relief of pain, but for shortening the time required for treatment. Also as a means of increasing our knowledge of palpation, examination and investigation, and of giving relief in cases in which we may hitherto have failed.—Reprinted *in toto* from *Boston Med. and Surg. Jour.*, April 7, 1910.

THE HOSPITAL DIETITIAN.

BY WILLIAM F. BOOS, M. D., PH.D., BOSTON, MASS.

The great importance of a carefully chosen diet for the sick is being gradually recognized by the medical profession at large. In the treatment of diseases such as diabetes, typhoid fever and diseases of the kidneys, diet is now the most important factor, while in many other pathological conditions, like heart disease, diseases of the gastro-intestinal tract and diseases of infancy, treatment by diet alone, rather than by drugs, is asserting itself more and more. But food prescriptions lie outside of the apothecary's scope. To fill them properly, and to do a hundred other things which progress in the study of food and nutrition has made necessary, falls to the lot of the new profession, dietetics.

Few of us, I think, realize just what the manifold duties of a hospital dietitian are, and fewer still appreciate the responsibilities and the difficulties of such a position. During the past year the total expense of the Massachusetts General Hospital was something under \$400,000; over \$100,000 of this was for food. The fact alone, therefore, that the dietitian of an institution like the Massachusetts General Hospital is responsible for the proper expenditure of one-third the entire sum expended annually by the institution is most significant.

The task of the dietitian is arduous and it calls for very unusual qualities on the part of the individual. She must be economical, and yet she must not allow her economy to lower the standards of the hospital. She must be an executive of energetic and self-reliant character, since she has a definite, unequivocal position to maintain. If she wishes to retain capable employees—and most of you, I think, will realize what it means to deal with domestics—she must be patient, tactful and just. All these qualities, however, will not suffice to insure success if our candidate is not progressive as well; the dietitian of a leading hospital must keep in touch with any and all advancement which is made in her field of work, and she must develop ideas of her own in order that her institution may remain in the van. Since it is one of her duties to give the nurses their entire course in dietetics, she must needs be a person of excellent education and training in the fundamental sciences of physiology, chemistry and biology. Needless to say, she must be a good teacher; it is one thing to understand and ably to apply the theories concerning the values of food from a caloric, nutritive and digestive standpoint, to prepare the diets, to assume the care and management of the diet kitchen, and quite another matter, to teach all this to nurses in the course of three short months. No wonder it is, therefore, that few only of the candidates are successful.

Much, however, can be done to remedy the present state of affairs. If young women would revert to the old order of things and improve the home opportunity to learn some of the elements of domestic science, rather than to depend entirely upon the training schools, which they enter at a comparatively advanced age, a great deal would be gained. Then, too, study at the training school, although it is, of course, invaluable, is not complete; it is mainly theoretical. The many and varied problems of hospital dietetics cannot

be anticipated by the training school, and there being no books on this subject, a course of practical hospital work is really necessary. But a hospital is essentially an economic institution, the efforts of all persons connected with which must, in some way, be turned to account for the welfare of its own patients. At present this is not possible as far as pupil dietitians are concerned. The training of the candidate takes much of the dietitian's time, and the pupil has to be boarded and lodged at the expense of the institution, while the latter derives no benefit in return, either financially or in the way of services received. Under such conditions a hospital is really not justified in extending educational advantages to pupils in dietetics.

I would like to see established a hospital course in dietetics, a course, say, of two years, from which a class of second-year pupils would arise who could render valuable assistance to the head of the department. The pupils should pay for their first year, while their services as assistants would remunerate the institution during the second year of their training. Two years may not be necessary. I have no doubt that the preparation at the training school could be made more specific so that one post-graduate year at the hospital would suffice to give the pupil dietitian a comprehensive practical course. In any event, the training schools must coöperate with the institutions to produce the best possible graduates in dietetics specially prepared for hospital work. It would have great difficulty in securing positions for practical study; in fact, the training schools could perfect arrangements with one or more hospitals which would insure their competent graduates positions as dietetic internes.

The efficiency of the hospital dietitian would be greatly enhanced by this system, which would relieve her of much detail work, such as having to visit the kitchen three times a day to superintend the preparation of twelve meals for four messes. Advanced pupils would be able to assist in the elementary teaching as well, and time saved in this manner could be devoted by the dietitian to the study of her department in other hospitals; today the unassisted dietitian of a large hospital is so completely engrossed by her many duties that it is quite impossible for her to spare the time for outside study.

I would say, in closing, that the woman who studies to be a hospital dietitian has, in my opinion, entered upon a dignified profession of absorbing interest, and one which is eminently within her domain. Dietitians have come to be as necessary in a modern hospital as the visiting medical staff itself, and the demand for members of this profession must, therefore, be met in some way. At present it is woman's work, waiting for her, and offering fine inducements to her. This fact should be impressed upon young women in search of a professional career, for if there are no women available—and I fear there are not many—it will not be long, in these days of overcrowded professions, before men will add dietetics to the list of callings for men, and women may realize too late what an opportunity they have lost, in part, at least.—Reprinted *in toto* from the *Boston Med. and Surg. Jour.*, March 24, 1910.

ELECTRICITY SIMPLIFIED.

BY J. R. ETTER, M. D., CRAWFORDSVILLE, IND.

The writers on electro-therapeutics have seemed to vie with each other to see how much mystery they could throw around the subject, instead of speaking in common terms. Of course, I am fully aware that a writer who throws in, plentifully, Arabic, Greek, Latin and French phrases is voted a learned man, even by the common practitioner, who probably does not know the meaning of one of them without referring to a dictionary, yet I hold that the object of any book or paper should be for the edification of the class of readers for whom it is intended, and therefore should be clothed in language that could be understood. There is a widespread idea among physicians that there are as many kinds of electricity as there are different kinds of generators—that is, that a dry cell generates a different kind of electricity from that of a wet cell or dynamo. It is a convenient way of treating the subject to speak of different currents, as though they were different kinds of electricity, though they are only modifications of the same identical substance. We speak of galvanic, static, faradic, sinusoidal, direct and alternating currents. It is true that the uses in medicine of these various currents are widely different. We have currents of high tension or voltage, with almost no quantity or amperage, currents that seem to flow in a steady current and those that are intermittent, or interrupted in their flow. As a rule, high tension and low quantity currents are best adapted to the relief of pain, while low tension and great quantity currents are best for the absorption of substances. In fact, it is the quantity that does the absorbing of tissues or fluids.

The various currents spoken of in works on electricity are obtained by passing the original electricity through different machines, or apparatus, such as induction coils or transformers, where the original current is passed into a coil of wire known as the primary, and is forced to jump through an insulating substance onto another coil of wire known as the secondary. If the primary coil is of thick, short wire, and the secondary is a long, thin wire, the voltage or tension of the current given off the secondary coil is much higher than that flowing through the primary, and the quantity or amperage is proportionally decreased. This is called a secondary or induced current.

It is possible to pass a current of one volt into a primary coil and obtain a current of more than a thousand volts in the secondary coil.

The voltage would depend on the proportional lengths of the two coils, so a faradic machine, to be of value in relieving pain, should have a very long secondary wire and a comparatively short primary. An alternating current is one where each alternate pulsation traverses the wire or conductor in a different direction, and are of necessity interrupted currents. A steady galvanic current is one in which the electricity flows constantly in one direction. Devices are made for the purpose of breaking or interrupting the flow of currents. These are known as commutators or interrupters, and are arranged so that a current may be interrupted from a few times a minute to many thousand times. The current given off from a static machine is of very high tension and small quantity; this is perhaps on account of

the plates being made of insulating material. I have seen a statement from Tesla that a common static machine generates a current of 50,000 volts, so it goes without saying that the quantity must be almost *nil* or it would kill a patient across the room.

There are several factors to be taken into consideration if one expects to be successful in the use of electricity in the treatment of disease, among which I will mention the proper selection of cases, current to use in each given class, amount, length of each sitting, time between treatments and the suitability of the electric machine used.

A physician need not expect to cure or even benefit all his cases with the faradic current alone; neither can he with a galvanic current alone. He had as well try to extract a tooth with a scalpel, or perform a laparotomy with bone forceps, as to rely on one kind of current in the treatment of the various conditions in which electricity is useful. In this paper I shall only mention the characteristics of a suitable machine, and leave the discussion of the other factors for an article which I hope to write in the near future. There are two distinct kinds of machines. One is arranged to take its current from a commercial circuit and the other is designed to use cells of battery. The former class of machines are, perforce of circumstances, stationary, while the latter, owing to the fact that the cells may be contained in the cabinet, are movable about the office or from one room to another. A machine of whatever kind must have sufficient capacity to generate tension and quantity of current for the various requirements, and also have the proper devices for regulating the same, as one seldom finds two patients that can stand the same amount of current, or that even require the same. There are many kinds of rheostats for the controlling of currents, but the object of all is to retard the flow, so as to regulate the amount reaching your patient. The rheostat has no other function than that mentioned, the quality or kind of current being in no way affected. One must have suitable electrodes, but the great multiplicity of them have, to an extent, been detrimental to the profession—that is, has deterred many from purchasing electric outfits.

An agent calls on a physician to sell him electric apparatus. He does not have the machine with him that is the real thing, that must do the work, but has a string of electrodes that reach clear across the office.

The whole talk is on the merits of each separate electrode, which he exhibits in the most fascinating manner. It makes the physician feel that he cannot learn how to use so many instruments, at least all at once, and at the same time he decides that he will not equip himself with anything in the electric line until he can take a post-graduate course in electricity, which will probably be—never. If one has a good machine that will give the galvanic, faradic and sinusoidal currents he can do very satisfactory work in the majority of cases. He will be able to do work that he cannot do otherwise with medicine. Easing pain, absorbing strictures, reducing tumors, dispersing pus accumulations and a hundred other conditions may be successfully remedied with electricity.—Reprinted *in toto* from *The Medical Summary*.

BOOK REVIEWS

SPONDYLOTHERAPY: Spinal Concussion and the Application of Other Methods to the Spine in the Treatment of Disease. By Albert Abrams, A.M., M.D. (University of Heidelberg), F. R. M. S. Consulting Physician to the Mount Zion and French Hospitals, San Francisco; formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College, San Francisco. Cloth; 400 pages, with 97 Illustrations. San Francisco, The Philipolis Press, 406 Lincoln Building. \$3.50.

The spectre of spinal therapy has hovered in the wake of regular medicine now for many years. It assumes shapes that are vague, absurd, even vexatious; it wears odd names, osteopathy, chiropractic or what not, but one fact is noteworthy—despite all its oddness, vagueness and absurdity, this spectre persists.

The present volume represents the first attempt of a regular physician and scientific authority to explain the scope and real uses of physical methods applied to the spinal region in the treatment of disease. It will surprise most of our readers to hear how wide the scope of spinal therapy is and how real and eminently practical its uses are.

Dr. Abrams, who has given the profession many valuable papers and books in the field of clinical medicine, states that he was led to a deeper study of spinal therapeutics in connection with the various visceral reflexes which bear his name. It was discovered, for example, that the heart reflex, both the reflex of contraction and that of dilatation, can be more easily and positively evoked through the spine than by any of the procedures previously used.

The author divides his work into eleven chapters. In the first chapter he deals with historical aspects on the subject—the primitive era of Spondylotherapeutics—the Griffin brothers, Swedish gymnasts; osteopathy, chiropractic, the researches of Dana, Quincke and Head, and the discovery of the vertebral reflexes.

The second chapter presents anatomic, topographic and physiologic data. The third treats of examination of the back, and the fourth gives a summary of purely spinal diseases.

The fifth chapter describes the general procedures of Spondylotherapy, including abdominal supporters, acupuncture, counter-irritation, electrotherapy, exercises, re-education of co-ordinated movements, spinal-hydrotherapy, lumbar puncture, massage, psychotherapy, thermotherapy and vibratory massage.

The sixth chapter, on "Pseudo-visceral Diseases," is one of the most original and helpful in the book. Neuralgia of the spinal nerves is a great simulator of visceral disease. It is frequently accompanied by visceral symptoms of such prominence that the spinal origin of the pain or tenderness is overlooked and treatment is directed to the peripheral place, and so is unsuccessful. The author gives careful directions for distinguishing between the pains of undoubted visceral disease and the misleading nerve-root pains of false cerebral disease, false angina pectoris, false gall-stone disease, false dyspepsia, false appendicitis, etc.

Chapter seven gives instructions for influencing the circulatory system. It is interesting to learn that this can be done far more effectively and permanently by means of spinal therapy than by means of drugs. Abrams was the first to call attention to the fact that the heart muscle can be made to contract by irritating the skin of the precordial region. The Schott method is only one way of evoking and maintaining the heart reflex of contraction, and Abrams states positively that in weakened and dilated states of the heart muscle his method of stimulating certain centers in the spinal cord is far more effective in promptness and in permanency than are the methods used at Nauheim. In addition, the author states that the cardiac neuroses may be easily influenced by spinal concussion, and that the blood pressure, whether high or low, may be modified at will. Much valuable information is given upon the subject of the aortic reflexes, and especially upon that of dilatation of the aorta.

Chapters eight and nine deal with the spondylotherapy of the respiratory apparatus and of the digestive system, respectively. They contain many practical lessons in diagnosis, as well as in treatment.

The last chapter, on the therapeutics and diagnosis of pain, is highly suggestive, and opens up one of the most promising paths in spinal therapeutics. Pain is the result of an accumulation of individual stimulants in the gray substance of the spinal cord, but, in accordance with the law of eccentric projection, the consciousness of pain is often transferred to the periphery, and there we often apply our remedies unsuccessfully. The author gives directions for segmental localization—that is to say, he tracks the peripherally referred pain to the spinal segment really involved and applies his remedies at that point. These remedies consist of concussion, sinusodalization, freezing and pressure, and with them the author states that he has been able to cure many hitherto intractable painful conditions, not only of the peripheral nerves, but of the viscera.

The book is handsomely printed and illustrated, and is a credit to the publishers. Every reader of *PHYSIOLOGIC THERAPEUTICS* would do well to procure a copy and profit by its study.

A BRIEF GUIDE TO VIBRATORY TECHNIQUE. By Noble M. Eberhart, A. M., M.S., M.D., Professor and Head of Department of Electro-Therapy, Chicago College of Medicine and Surgery; Professor of High Frequency and Vibration, Illinois School of Electro-Therapeutics; Electro-Therapist to the Willard Hospital, Etc.; Author of "Practical X-Ray Therapy," Etc. Second Edition, revised and enlarged. Cloth; 12 mo.; 160 pages; 10 diagrammatic plates. Chicago, New Medicine Publishing Company, 72 Madison street. \$1.00.

It is an unfortunate fact that too many individuals, both physicians and nurses, fail to realize that the use of vibration in the treatment of disease conditions is more than a mere fad. It is the exception rather than the rule to find vibratory treatments given with the carefulness and precision that their value and importance really merit. Most possessors of a vibratory apparatus have an idea that its use consists simply in turning the button and applying the vibratode. Nothing could be more fallacious.

Vibration therapy is as much a science as any other branch of therapeutic medicine, and effective vibratory technique an art to be mastered by study and experience, rather than carried out in the haphazard way that is still all too common.

In his book on vibratory technique, Dr. Eberhart has gathered together a mass of practical information, which he serves to his readers in a concise, predigested form, ready for immediate use. The various diseases amenable to this form of treatment are enumerated and the exact procedures given in unmistakable terms. The positions of the various nerve centers to be treated are made plain by clear-cut illustrations. The doctor has not forgotten to explain the minor details, such as the kind of stroke, length of treatment, frequency of treatment, cautions, etc.

This book is valuable in that it contains the pith of the practical experience of a physician who has for years successfully used vibration in an extended practice, but best of all, in our minds at least, is the simplicity and lack of technicality evidenced throughout. Needless to say, we cordially recommend it to our readers.

THE PROLONGATION OF LIFE: Optimistic Studies. By Elie Metchnikoff, Sub-Director of the Pasteur Institute of Paris. Translated and edited by P. Chalmers Mitchell, M.A., D.Sc., LL.D., F.R.S., with an introduction by Prof. Charles S. Minot, of Harvard University. Cloth; 343 pages, illustrated. New York and London, G. P. Putnam's Sons. \$1.75 net.

Prof. Metchnikoff's epoch-making studies have earned for him the respect and consideration of the medical profession the world over. His latest book is one well worthy of his name. The important question of the prolongation of human life is studied from the standpoint of the scientist rather than that of the economist. The author's conceptions are, admittedly, so far advanced that they are not all of them yet wholly accepted by the profession, but this book is, nevertheless, one with which every progressive medical man should acquaint himself, for is not the main function of the physician to prevent human suffering and to prolong life?

Metchnikoff is one of those rare scientists who present to the world in untechnical phraseology results of research that are of universal interest and go straight home to the bosoms and business of intelligent men.

We were especially interested in Chapter IV, in which the learned author endeavors to show that intestinal putrefaction shortens life; that intestinal antiseptics are only of slight avail; that the large intestine is as superfluous as the appendix, and that "Fletcherism" cannot be recommended as a preventative of intestinal putrefaction.

Of course, the therapeutic value of the administration of lactic bacilli in intestinal putrefaction is discussed freely, and it is interesting to see just what this great savant really says regarding this; it is somewhat different from the information obtained in the advertisements of several manufacturers of lactic ferments.

Undoubtedly in this book are to be found facts which, although

at present are only vaguely understood by the majority of us, will become the basic principles of the future practice of medicine.

THE SCIENCE OF LIVING, or the Art of Keeping Well. By William S. Sadler, M.D., Professor of Physiologic Therapeutics, Post-graduate Medical School, Chicago; Director of the Chicago Institute of Physiologic Therapeutics; Member American Association for the Advancement of Science; Etc. Cloth; 420 pages, illustrated. Chicago, A. C. McClurg & Co. \$1.50.

Dr. Sadler has crowded a large amount of seasonable information into this volume. His experience in Chautauqua work has taught him how to express his thoughts in clear-cut, concise language, and for this reason his book is worthy of warm commendation. It will be especially valuable for physicians who wish to be able to interestingly explain various technical points to their patients. Much new light is shed on this subject.

There are many books published on health topics, the majority of which cannot well be recommended by physicians as the best reading for their patients. There is often too much of the faddish in them. Dr. Sadler, in his book, on the other hand, has kept closely to the cold facts and made them interesting and entertaining with a style which only comes from long experience in the lecture field. This, to our minds at least, makes this preëminently a book for the physician first to read and then to recommend. We enjoyed reading the book very much. The extensive appendix contains a number of tables which, so far as we are aware, are not to be found in any other one book.

PRACTICAL HANDBOOK OF MEDICAL ELECTRICITY FOR STUDENTS AND PRACTITIONERS. By Herbert McIntosh, A.M., M.D., Member American Medical Association; Fellow Massachusetts Medical Society; Fellow New England Association for Physical Therapeutics; Member American Electro-Therapeutic Association; Etc. Cloth; 510 pages, with over 200 Illustrations. Boston, Therapeutic Publishing Company. \$3.00.

The author has gone very fully into the physics, as well as the physiologic effects of all the numerous forms of electricity used in medicine, and has expressed himself in words that can be readily understood and appreciated. The methodical way in which the subject is handled makes this book of great value to the physician.

When a book is evidently an epitome of the author's personal experience, rather than a collection of dead facts, it cannot but be helpful to its readers. Dr. McIntosh's book is very apparently his own—it seems to be original from cover to cover, and therefore will prove of considerable helpfulness to those fortunate enough to possess a copy. The whole subject of medical electricity is considered from the standpoint of the disease, rather than the remedy, thus making it of far greater use as a work of reference. We were especially

pleased with the large and comprehensive summary and index of treatment, which enumerates over 230 disease conditions.

THE PRACTICE OF OSTEOPATHY: Its Practical Application to the Various Diseases of the Human Body. By Chas. H. Murray, A.B., D.O. Cloth; 340 pages, with 108 halftone engravings. Elgin, Ill., The Elgin Osteopathic Publishing Company, 325 Spurling Building. \$2.50.

The term "Osteopathy," although to our minds a misnomer, will persist for the same reason that the term "Physiologic Therapeutics" persists—it is too well known to be changed now.

It is unfortunate that certain of our osteopathic friends have made it known to their clientele that there was practically nothing in medicine but osteopathy, and that as they performed it this method was all-efficient. Naturally this has caused much skepticism and criticism, for these men were wrong. Spinal manipulation, however, is still one worthy of consideration.

The author admits that "very many are attempting to practice who know comparatively little of the science," and we thoroughly agree with him. All the apples in a barrel are not necessarily to be refused because one or two of them happen to be rotten; nor should the medical profession forego the good that is undoubtedly in osteopathy simply because our first impressions, gathered, perhaps, from the bombastic statements of some itinerant "osteopathic physician," were unfavorable.

We will be candid. We do not believe with the author that "mothers may treat their children," or "some interested member of the invalid's family may devote time to the treatment," nor do we agree with him in many points of treatment to be found in his book; but, on the other hand, we have not seen a book devoted to osteopathic technic that was as plain, simple and so well illustrated as this one. We therefore recommend it to those of our readers who believe in getting the best there is in every phase of the healing art.

CORRESPONDENCE AND QUERIES

In this department we hope that our readers may get any special help that they may need. Our whole staff is at your service. Here questions germane to the subject of physiologic therapy will be answered. Do not hesitate to send in your questions no matter whether they refer to technic, apparatus or anything of general interest. We shall not hesitate to use names, addresses, and, if needs be, prices, for frequently matters that are not strictly scientific are of equal importance in the work of the busy physician. *If you want to know, you can learn it here!*

The Value of Small High Frequency Outfits.

Is it worth while investing \$25 in a small, portable high-frequency outfit? I have seen quite a number of them advertised recently?—Dr. H. Dalton, South Bend, Wash.

If you have a good, working knowledge of the uses and technic

of high-frequency currents, or are willing to gain one, you can find many and varied uses for the \$25 high-frequency machine. In this issue Dr. Eberhart gives us a very concise, practical article dealing especially with the technic of the use of this current and the limitations of the small machines.

The wording of your question hints at the possibility of these machines being a humbug—made to sell. Maybe you did not mean it that way, but if you did let us disabuse your mind right here. Many of the makers (some of them progressive enough to advertise with us from the start) would hardly jeopardize their reputations by putting useless trash on the market. Remember that the sale of such an outfit is a mere incident—a part, and a small part, too, of an extended variety of electrical apparatus.

These machines have been tested out thoroughly before being put on the market, and when you buy one you buy something worth all you pay for it.

The Arc or Incandescent Lamp?

Dr. Henry Fledderman, Bellwood, Neb., asks: "Which of the therapeutic lamps, the arc or the incandescent, is the best for the treatment of chronic rheumatism, lumbago, ovaritis, etc.?"

In the treatment of all of the above mentioned conditions the heat from the lamp is the main factor in securing effective results, consequently the lamp which gives the greatest amount of heat with the least expenditure of current, and, of course, the least bother, will be the one to recommend. The arc lamps do the work very satisfactorily, but in this case we would prefer to use a suspended high-candle power lamp. The Leucodescent is the oldest and most extensively used and we recommend it warmly. Several of the large electrical houses, notably the Victor Electric Company, make a splendid therapeutic lamp. Further information can be obtained direct.

An Old Work on Hyperemia.

Dr. O. Newell Duvall, 1326 North Mount street, Baltimore, Md., writes: "Can you tell me anything about a vacuum treatment devised by one Victor Theodore Junod who graduated in Paris in 1833? In 1875 he published a small work entitled 'The Theory and Practice of Haemospasia.' His treatments, which he termed 'Blood Derivations,' were given by means of vacuum cups and apparatus for the arms and limbs. I am told that he reports 209 clinical cases in this book, many of them being nothing short of wonderful. The only copy I can learn of is owned by Surgeon General Wyman of the U. S. P. H. & M. H. S. I am anxious to find a copy of this work in English and would be pleased to have you inquire for it through

PHYSIOLOGIC THERAPEUTICS."

We hope that some of our readers can answer Dr. Duvall's questions and that if there is something extra good in this book that we may reproduce some of it here for the benefit of our readers. Age does not diminish the value of a therapeutic procedure; massage and hydrotherapy have been in vogue for centuries.—Ed.

THE EDITOR'S PERSONAL PAGE

This department is to be my "steam gauge"—a place where I can correspond with my readers—where I can say what I want to about my friends, my journal and things in general. In this department of every issue I expect to write you a heart-to-heart letter. You know an editor often feels the need of getting into personal touch with his readers—to tell them how things are getting along; to ask their opinions; to give them advance information; and, perchance, to stimulate them a little!

* * *

If you will look on page x of the advertising section you will find a list of good things which may be expected to be served to you during the coming year. It is quite an encouragement to me to be able to print such a formidable list of prospective articles. If I am not much mistaken you will find that you made a good investment when you subscribed for *PHYSIOLOGIC THERAPEUTICS*—or will when you do!

* * *

It is only proper here to express my appreciation to those who have helped me to start this journal.

Many editors were good enough to insert a more or less extended notice in their respective journals and their kind services are greatly valued. Maybe some day I can manage to reciprocate.

The generous co-operative spirit of the associate editors must not be forgotten. These men—every one of them as busy as he can be—have volunteered to help make this journal a success. Not only is *PHYSIOLOGIC THERAPEUTICS* benefited by the prestige which their names must inevitably give, but they are going to see that the reading matter which is given you is "worth while."

* * *

I hardly think it would be fair to say nothing about the subscribers. You know a man doesn't usually care to pay a dollar for nothing. Dollars are not that easily earned these days. Yet hundreds of subscriptions were sent in *with the money* before a line of this was set or a page cut. Maybe yours was among them—if so, thank you a thousand times.

I would like to say something about "Queries and Correspondence." The value of this department will depend to a great extent on the readers of this journal. If questions are forthcoming they will be answered by capable men, who are in a position to tell you just what you want to know. If you want an answer at once enclose *several* stamps to "pay the freight." Let us make this part of *PHYSIOLOGIC THERAPEUTICS* something really good.

* * *

Just a few words about our advertisers—they're all right! It was no joke starting out with nothing but an idea to make of it a new journal like this, especially when three or four others before us had failed. I put this proposition up to them fairly and squarely and they believed in the need for just such a journal as I hope always to present to you. And they backed up their belief with something worth while—see what a nice bunch of ads there is.

* * *

Naturally I believe in these advertisers and bespeak the confidence of my readers in their wares. Without this advertising we could not exist. Practically all journals depend on the advertising for support, for the cost of paper and printing makes it impossible to produce a journal of this kind for a dollar a year. On the other hand the advertiser depends on me to put you in touch with him and his goods, and it is manifestly to my interest to impress this upon you so that you may place the same confidence in them as I do and that they have done in me. I confidently believe that you can deal with any advertiser in this journal with just the same feeling of security as though you were dealing with them face to face. Help me, then, to "make good" by patronizing these advertisers—and *don't be a bit shy about saying where you saw their ad!*

* * *

Now, Doctor, help me to make *PHYSIOLOGIC THERAPEUTICS* a huge success—and remember what has been said about advertisers. Supposing you sit down and write a few letters now?

Henry R. Harrower.

Our Advertisers, Their Wares and Some Comment.

This department takes the place of the "reading notices." Instead of being written by a number of enthusiastic advertising managers and printed in many journals, it is written by the editor and appears only here. Naturally the comments are all favorable, for we believe in our advertisers and their goods. Why? Because they believe in us and are making this new journal possible to you.

* * *

All progressive members of the A. M. A. will try to be at St. Louis in June. We expect to be there and we're going on the "C. & E. I." They have a fine service and Schmidt will treat you right. Call him up, if you can, or write.

* * *

The name "Scheidel" on an X-Ray Coil means that it's a good one. The combination high frequency and X-ray outfit advertised on page XVII is said to be the best yet. If several of your grey cells are working overtime thinking of X-ray coils, get their catalogue.

* * *

We will give you just a little bit of "inside history." The Victor Electric Company (ad on page XX) were the very first to take space in this journal. Their confidence in us deserves your confidence in them, and their reliability is unquestioned. Get in touch with them.

* * *

If you could see the combination offered by Lindstrom, Smith & Co. You would be interested right away. We were. It will pay every reader to find out about this special offer advertised here *first*. See the cut on page V—then write at once.

* * *

Anderson, Norden & Co. (see page XIV) make Static Machines and X-Ray Outfits. They confine their energies to this special line of apparatus and they are experts. Mr. Anderson will be glad to hear from you—will be glad to have you write him. We would very much like to be the "go-between" in a deal between you and them—for obvious reasons. A postal starts things.

* * *

We can hardly say enough good things about The Backbone Monthly. It's fine. Just the kind of reading for

yourself and your patients. Get a sample copy—subscribe for it—see our special "something for nothing" club proposition on page XI.

* * *

It isn't every one of our readers who wants an electric light bath; but likely as not more than one that reads this journal may be thinking some of getting one. We recommend the Birtman—it's made to use.

We are told that there is a special proposition waiting for readers of *Physiologic Therapeutics*—look up the ad on page ii, then find out about it.

* * *

If physicians as a general rule were as enthusiastic about the business end of their practice as some of them appear to be about its scientific side their average annual remuneration would be much greater than it now is.

The Physicians' Business Journal comes at an opportune time—it's it's needed badly. And yet we prophesy that not five per cent of the physicians in this country will subscribe for it during its first year.

But you will, we are sure, for a man progressive enough to get *PHYSIOLOGIC THERAPEUTICS* will get *The Physicians' Business Journal*. See page XII.

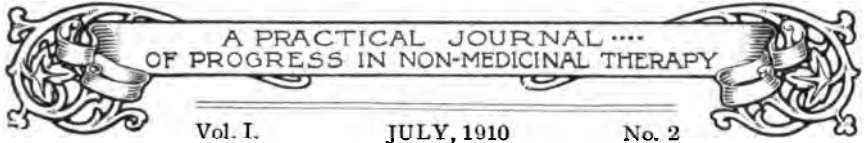
* * *

Mr. Meyer and the printer managed to get a good deal into the page ad on page VI; but the things mentioned there are only a very few of many good things The William Meyer Company has in their fine new list. It's almost a work of reference and since it costs you nothing you ought to get one—perhaps it will put you in touch with something in this line that you need. We hope so.

* * *

Some time ago we had occasion to investigate a new "aircleanser" made by the Duntley Manufacturing Co., of this city. The principle of their well-known vacuum cleaner has been reversed and combined with a device which enables one to saturate the air with any desired disinfectant or medication. They have hit upon a fine thing and it might be worth your while to investigate it. No! They are not advertising in *PHYSIOLOGIC THERAPEUTICS*. It would seem that this air cleansing apparatus will have as great a scope in medicine as the vacuum cleaner has in the home.

THE AMERICAN JOURNAL OF
Physiologic Therapeutics



EDITORIAL

AN ACKNOWLEDGEMENT.

We wish to utilize this space—the most prominent in the whole journal—to express our keen appreciation of the hundreds of kind and encouraging sentiments regarding **PHYSIOLOGIC THERAPEUTICS** expressed both by letter and by word of mouth.

As we surmised, there is an evident need for just such a journal as we are attempting to make of this. The cordiality of its reception is, to us at least, a sign that the interest of the profession in the various non-medicinal methods of treating disease is on the increase; and we confidently believe that the years to come will show an ever-widening sympathy for what we consider to be a most important branch of the science or art of therapeutics.

To those who have taken the trouble to write us words of encouragement we say "thank you"; to those who have thought kind thoughts which through lack of time, or for any other reason they have failed to communicate to us, we return their consideration in kind, and are free to add here that we shall hope for the continued coöperative assistance of every reader of **THE AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS**.

VACCINES IN THERAPEUTICS.

Much has been written during recent years concerning the relation of bacterial emulsions, or vaccines as they have been unfortunately commonly called, to therapeutics. At first loudly lauded as of wonderful efficiency in a very extensive series of diseases, they proved to be frequently disappointing, particularly in the hands of the unskilled, and accordingly lost much of their first repute. More recently a rather conservative attitude and a more exact method of application has proved that in certain departments their use is followed by results much superior to any possible where they are not employed. The theoretical reasons for their action are certainly based upon most

scientific grounds. Determination of the opsonic index, while productive of much valuable information to the properly trained observer, is uncertain in the hands of others, is no longer usually necessary, and is entirely too cumbersome for practical clinical work.

In the field of therapy, vaccines are, of course, strictly limited to diseases of infectious origin. Among such diseases the greatest success may be anticipated in those due to infection by the staphylococcus. This is particularly true of the long-continued cases of furunculosis that usually entirely fail to respond to other remedial agencies. Here vaccines seem to be as nearly specific as in any one place, and by unanimous consent this is now considered to be the most satisfactory therapeutic means to employ. In various other forms of staphylococcus infection, such as abscesses, septic wounds, otitis, peritonitis and sometimes septicemia, very gratifying results have been obtained, even including a number of forms of skin diseases characterized by the formation of pus.

In streptococcus infections the greatest care must be devoted to the preparation of the vaccine, using preferably an autogenous one, and one where the virulence of the microorganisms has not been unduly decreased by artificial manipulation. Streptococci produce so many severe infections that anything offering hope is readily welcomed. And certainly many of the results following the use of streptococcus vaccine have been most brilliant. In erysipelas, in carbuncles, in septicemia, particularly the puerperal type, in infections of various localized parts, and even in a few cases of pyemia, vaccines have been satisfactorily used.

With these severe infections the person most experienced in the administration of the treatment will obtain far better results than will others, as much depends on personal observation and careful gradation of the treatment.

The almost protean manifestations of the colon bacillus are frequently much helped by the vaccines, at other times no effect is seen. Colon cystitis, pyelitis and peritonitis seem to present the most hopeful cases.

Gonococcus vaccine in arthritis, and in some of the remote sequelae of the disease, is indicated strongly; in the acute manifestations its administration is still open to uncertainty.

Prophylactic injections of typhoid emulsions are among the most important of our recent preventive measures against epidemics, while in the hands of some, smaller amounts used for distinctly therapeutic purposes have yielded very satisfactory results.

The specific treatment of pneumonia must be left for the present *sub judice* with evidence apparently in favor of its value.

Tuberculin treatment of tuberculosis has undoubtedly made a

safe position for itself, both in its pulmonary, and in the other forms. Judgment concerning the individual case is essential as well as selection of the proper size and gradation of the dose. In mixed pulmonary infection the judicious use of the various vaccines has frequently been followed by most pleasing sequelae, while even in advanced and hopeless cases, many of the troublesome and unpleasing symptoms have been much alleviated.

Various miscellaneous conditions, such as alveolitis, otitis media, Ludwig's angina, empyema and peritonitis, in which the appropriate preparation has been used, have responded most successfully in the hands of competent workers.

In short, vaccine therapy as now used by our best men, offers much in the treatment of certain conditions that cannot be obtained from any other measure. Its field of usefulness while very evident is as yet without distinct borders, and will probably steadily increase in extent as our knowledge of the underlying principles becomes more thorough.

W. H. WATTERS.

BIOLOGIC THERAPEUTICS.

An enterprising St. Louis reporter, in search for copy for his paper, asked a number of visitors to the recent meeting of the American Medical Association in that city "what was, in their estimation, the greatest advance made in therapeutic medicine during the past few years." The answers were surprisingly unanimous—diphtheria antitoxin and bacterial vaccines.

We have watched with great pleasure the revival of the interest in therapeutics, which has been caused by the discovery of the opsonic theory and the wide researches made into the realms of immunity. The expectant attitude of the profession toward the work of Wright and other leading investigators has now been modified to a feeling of realization. "Vaccine therapy" or "opsono-therapy," as it is variously termed, has, without a doubt, made good.

The years that have passed since Wright made known his theories have yielded a wide clinical experience, which has demonstrated two things: First, the opsonic index is not fit for ordinary clinical use even by the skilled laboratory man; and, second, that the use of bacterial products—emulsions, reaction-sera and toxins—has come to stay.

The study of biologic therapeutics, and by this term we refer to the use of biologic products as therapeutic agents, is still young; but the marvelous results so far obtained are shadows which portend the possibilities of this important branch of physiologic therapeutics. The time

will come when the general practitioner will use the stock vaccine as he now uses antitoxin.

The work of the future will be more closely confined to acquainting the rank and file with the vast possibilities of biologic therapeutics and getting them to make use of these methods in the hundred-and-one conditions, directly or indirectly, amenable to this form of treatment.

We do not want to appear over-enthusiastic, but we feel fully justified in our premises and state unhesitatingly that in the application of the principles of the "opsonic theory" we have the *open sesame* to the successful treatment of all germ diseases.

TEACHING ELECTRO-THERAPY.

Those who are able to read the signs of the times appreciate the fact that Electro-therapy will form a principal part of treatment in the future. Therefore, it behooves the medical college to devote more attention to this branch than it has hitherto received.

There are too many men who pass over these measures slightly and impugn the methods of their brother practitioners as "savoring of quackery," if the latter employ anything aside from the prescription pad and pencil. Then they wonder why their practice is gradually slipping away from them into the hands of the more "up-to-date" men.

We believe the fundamental reason for this attitude is ignorance. The man who has never received any instruction in Electro-therapy, who does not know the difference between a volt and an ampere, wisely shakes his head when asked his opinion and condemns the whole subject. Worst of all is the man who has the opportunity offered him of verifying the claims of the electro-therapist and refuse even to investigate.

The average physician receives practically no instruction in Electro-therapy in his college course and any knowledge he possesses has been subsequently acquired. We venture to say that not one practitioner in a hundred who graduated ten years ago received actual clinical instruction that would make him familiar with the technique of even the simplest electro-therapeutic procedure.

At the same time that we decry the prejudice against Electro-therapy, we must be fair-minded enough to recognize that the absurd fanaticism of some physiotherapists has operated against the good of the cause.

The ultra-enthusiast does as much harm as the absolute skeptic.

We must learn to be reasonable in our statements and must remember that however much good there may be in any one form of treatment, that it has its limitations; but above all let us remember that physical methods seldom conflict with other measures and since, for this

reason, they are perfectly compatible, they may be used simultaneously to the added benefit of our patients.

We admit that it is easier to write a prescription or give a pill than it is to employ any one of the various forms of electricity, and it does not involve the investment in more or less expensive apparatus. But what of our patients? Is not our object to benefit them to the utmost of our skill, and are we justified, then, in neglecting measures which have been proved to be beneficial as the various electrical modalities?

If the principal draw-back is a lack of knowledge of these branches, then it is of the utmost importance that medical colleges furnish more thorough instruction in this field. Devoting a few hours to it as a side line in teaching another branch is absolutely insufficient, and any teaching which does not afford students the clinical opportunity of mastering technique also falls far short of the mark.

NOBLE M. EBERHART.

ANOTHER NEW JOURNAL

We learn that there is to be another journal devoted to physiologic methods of treatment and we want to be among the very first to welcome it to the field and to give it the right hand of fellowship.

Dr. Herbert McIntosh, of Boston, who is well and favorably known to our readers through his excellent book "A Handbook of Medical Electricity," expects to publish *The Journal of Physical Therapy*, the first number to be dated August, 1910. If this undertaking is to be judged by the reputation of its editor, and his erudition by what he has given to us in his book, this journal bids fair to make things interesting for us from the very start. However, we are not dismayed, for, as we said in our last issue, the field of physiologic therapy is an ever-broadening one and the number of journals devoted to it far too small. We welcome *The Journal of Physical Therapy* and wish it and its editor everything that is good. We need hardly say to those of our readers who are looking out for the best there is in this kind of medical journalism that Dr. McIntosh will be pleased to enlist them as subscribers to his new journal.

The men whom I have seen
succeed best in life have always
been cheerful and hopeful men,
who went about their business
with a smile on their faces and
took the chances of this mortal
life like men, facing rough and
smooth alike as it came.—Charles
Kingsley.

ORIGINAL ARTICLES

THE ELECTRICAL TREATMENT OF DYSMENORRHEA.

BY MAY CUSHMAN RICE, M. D., CHICAGO, ILLINOIS.

Electrotherapeutist to the Mary Thompson Hospital; Gynecologist to the Illinois School of Electrotherapeutics.

Dysmenorrhea, or pain in the pelvis during or preceding menstruation, may always be traced to a pathological state of the uterus, its adnexa, or the nervous system. Most commonly the cause is found in the uterus itself, the appendages being the second cause and the nervous system ranking third as an etiological factor. The most common pathological condition of the uterus causing dysmenorrhea is inflammation of either the parenchyma, the endometrium or both of these.

How to get rid of the inflammation is a question which has perplexed physicians from time immemorial, and is still puzzling the profession at large. Surgery, though sometimes successful, should certainly be advised only when more conservative treatment has failed. Marriage, so often recommended as a last resort, is rarely a cure for dysmenorrhea. The old time douche and tampon, long ago proven inefficient save in slight degree, are still being recommended and used in the vain hope of relief and this in spite of the fact that inflammation, wherever located, is conceded to be of germ origin.

The Superiority of Electrotherapy.

The cause cannot be removed by saturating the system with drugs of various sorts or by any kind of external applications. On the other hand what more logical treatment can be given than the direct introduction of a powerful germicide into the affected tissues? By means of the galvanic current, better termed the continuous, alone can this be accomplished. Various oxidizable metals are used for this purpose, but the metal most effective as a germicide is copper, which, because of its strong affinity for the negative pole, when applied to the continuous current, is carried toward it into the tissues, the depth of the deposit depending upon the amount of current used and the length of the application. The positive pole itself is powerfully anti-congestive and germicidal. When to this is added the astringent and germicidal action of the copper the result is a combination of inestimable value in dealing with infected tissues wherever located. If the endometrium is the seat of the disease the copper is applied by means of a bare intra-uterine copper electrode directly to the diseased part. If the uterus or adnexa are involved in the inflammation, the cataphoric application is made per vagina by means of a covered copper ball.

Technique of the Treatment.

For the treatment of an inflamed endometrium a copper sound that will just pass the internal os without force should be selected. If this sound has an insulated tip the concentration of current always existing at points of electrodes will be avoided. If the electrode is bare at the point, after introduction it should be withdrawn at least half an inch. The amount of tissue to be treated will determine the length of copper surface. If the entire endometrium is involved and the internal os relaxed, the copper may extend over two and one half inches. Unless the copper surface is amalgamated, the metal, under the influence of the positive pole, will stick to the tissues, necessitating reversing the current to release it. As the negative pole counteracts the beneficial effect derived from the positive pole this is not advisable. It should be prevented by amalgamating the copper with mercury, accomplished by dipping the metal part of the electrode first into a ten per cent sulphuric acid solution and then into metallic mercury; on rubbing the copper briskly with absorbent cotton it will have the appearance of silver. This process should be repeated each time before using the electrode. Amalgamation serves a double purpose—the prevention of the electrode from sticking and its perfect sterilization.

When the uterus is in its normal position the treatment is best given with the patient in the dorsal posture. A large wet pad, covered with rubber sheeting to keep the clothes dry, is placed upon the abdomen. This is connected with the negative pole. Then through a speculum the cervix is swabbed off with a mild antiseptic solution and the copper amalgamated electrode introduced. This is made the positive pole. Twenty-five to forty milliamperes of current are then turned on for five minutes.

The Use of the Sinusoidal Current.

This should be followed with the sinusoidal or induced current, the same electrode being left in the uterus during its passage. The object of this current is to stimulate the circulation, promote absorption of the copper deposited by the galvanic current and, by contracting the uterine muscles, act as a general tonic to the same. To produce these effects it is necessary to interrupt these currents by placing in the circuit the mechanical rheotome. The number of interruptions should not exceed seventy-five per minute. If the current is used without the rheotome the muscles will be exhausted rather than strengthened. Intrauterine galvanism should rarely be given oftener than twice a week. If repeated too often new granulations are destroyed and healing is thus delayed.

Cervical catarrh is much more common than corporeal. This

PHYSIOLOGIC THERAPEUTICS.

requires an electrode, similar to that above described, amalgamated in the same manner, the only difference being that there should be only one inch of exposed copper surface. The tip should be insulated with hard rubber to secure concentration of current at the external os where the inflammation is most active. The technique is the same as above, save that a larger amount of current, from thirty to sixty milliamperes, may be used in the cervix, and the time extended to ten minutes in severe cases. The tolerance of the patient should govern the strength and frequency of treatments to a large extent. By inspection one can best determine whether it is advisable to repeat the application in two days. It is often wise to give alternately with these treatments the high frequency current by means of the glass vacuum electrode.

The Immediate After-Treatment.

The patient should always remain in the office half an hour after treatment, particularly if the electrode has been passed to the fundus. She should be told to keep as quiet as possible the remainder of the day and should also be informed that there is liable to be some bleeding. Thus unnecessary alarm will be avoided. The bleeding is due to reaction following the stringent action of both the positive pole and the copper.

The Treatment of Adnexal Inflammations.

For inflammations such as ovaritis, salpingitis and even metritis vaginal applications are always preferable to intra-uterine. The best electrodes are copper balls either perforated or solid. The former is the Neiswanger, the latter the Goldspohn. Neiswanger's vaginal cathodic electrode consists of a perforated copper ball screwed to a hollow rod, which is insulated with hard rubber. It is made in one size only and is best adapted to cases which will allow the introduction into the vagina of large sized electrodes. In virgins the Goldspohn electrode, on account of its smaller size, is preferable. In either case the ball should be carefully covered. Failure to obtain satisfactory results is generally attributable to carelessness in covering the electrode and the recovering of it at each treatment. Results will never be good so long as the latter is done. When permanently covered the coverings become more and more filled with copper at each successive application and this has but to pass out into the tissues, while, if the ball is recovered at each sitting, none of the copper ever gets beyond the cotton. A separate electrode may be used for each patient, and kept in an antiseptic solution or, if one objects to the number of electrodes necessary, they may be rendered sterile by boiling from twenty minutes to one half hour. The hard rubber used for these electrodes stands boiling well. Although dis-

colored it is not injured. The gold beaters' skin, if torn by boiling, is easily replaced.

Technique of the Treatment.

The ball should first be brightened with sapolio or sand paper, then covered with a soft piece of chamois skin fitted over it as neatly as possible and snugly tied to the stem. Next is a layer of absorbent cotton and outside of this a covering of gold beaters' skin. If the solid ball is used it is necessary to perforate the gold beaters' skin several times with a needle so that the water may pass through the cotton. This for the reason that the gold beaters' skin is not absorbent. It is, however, a good conductor of electricity. The vaginal electrode is best introduced without a speculum. For this purpose a good lubricant is necessary. The ball should be placed as nearly as possible against the diseased part, thirty to sixty milliamperes of current passed for ten minutes and this followed by the induced current interrupted from thirty to forty times per minute for five to ten minutes.

The Treatment of Undeveloped Uteri.

Dysmenorrhea, due to an infantile uterus with stenosis, requires that the uterus be developed and the stenosed part dilated. Under the stimulus of an electrical current alone can the uterus be made to contract. By exercise induced by the faradic or sinusoidal currents muscular fibre is increased in quantity and often the uterus is nearly doubled in size. While dysmenorrhea, due to stenosis, is temporarily relieved by rapid dilatation, it is permanently cured by the gradual dilatation of the negative galvanic current. The reason for this is obvious. The one mechanically stretches the part, the other softens tissue, which later is absorbed. In this a mild current is essential to success.

With the patient in the dorsal position and a wet pad connected with the positive pole upon the abdomen an olive tipped electrode just a little too large to pass is connected with the negative pole and introduced to the constricted part. Through the rheostat five milliamperes of current are turned on and allowed to pass for five minutes, unless the olive enters the stricture sooner. In the latter case the current is turned off and the switches changed to the induced current, or preferably the sinusoidal. In neither case the current should be interrupted through the rheotome from forty to sixty times per minute, sufficient current being used to produce strong contractions of the uterus. The current should be given five minutes at first and gradually increased to ten at succeeding treatments. In three days if the olive previously passed enters the stricture unaided by the current, an olive a size larger should be selected. If it fails to pass the same olive should again be introduced. When

the current is given without the rheotome muscles are quickly exhausted by over-exercise. The slow interruptions result in tonicity rather than exhaustion.

Occasionally, when there is no stenosis but a tendency toward amenorrhea, the slowly interrupted faradic current given alone without galvanism gives very prompt relief. After the faradic current, when given alone, there is no discomfort as when galvanism has been given.

Neuralgic Dysmenorrhea.

Occasionally uterine or ovarian neuralgia is the cause of dysmenorrhea. The vaginal treatment above described is remarkably sedative especially when given in mild dosage. The Oudin or high-frequency current from the Tesla coil, applied with the glass vacuum electrode from five to seven minutes three or four times per week, is also sedative and has the advantage of causing no pain or discomfort during its administration. Galvanism and the high-frequency current may be advantageously combined at the same sitting or given on alternate days. For general upbuilding medicinal, hygienic and dietetic measures may be greatly enhanced by static insulation given daily. This modality as an equalizer of the circulation and nervous systems is being more and more used as it is being more systematically studied and, therefore, better understood. Under its influence patients gain in weight, red blood cells increase in number, arterial tension is lessened and lost equilibrium restored, the effect of all tending toward regulating the menstrual function.

825 Marshall Field building.

THE THERAPEUTIC ACTION OF HEAT IN RHEUMATISM AND SCIATICA.

BY JOHN E. O'CONNELL, M. D., NEW YORK CITY.

Attending Physician, St. Bartholomew's Clinic.

The application of heat to the skin in the treatment of inflammatory conditions is a therapeutic measure of great antiquity. The value of hot applications in the treatment of rheumatism and sciatica has been known for many years, and its usefulness is becoming more and more recognized by the medical profession in general. One cannot fail to realize the importance and value of heat when applied in the proper manner, since the results are almost without exception salutary. Hot applications of various kinds are often invaluable for the aid their judicious use gives to any internal medication which may be indicated.

How the Heat Works.

The action of heat tends to arrest the processes of inflammation by bringing about a materially increased flow of blood to the surface and

by generally stimulating the circulation in the diseased areas. In this way the stasis of blood which usually accompanies such conditions is dissipated and the products of inflammation are carried away for elimination by the proper channels. Heat in this way also favors phagocytosis. Besides this there is a remote action due to the local reflex stimuli carried from the sensory nerve endings in the skin to the medulla oblongata resulting in a slightly increased blood pressure and an acceleration of the heart rhythm.

As is already well known in rheumatism, and especially in the sub-acute and chronic types, heat is a most useful adjuvant to other treatment, while in gout and sciatica its use has a decidedly mollifying effect. In sciatica the Paquelin cautery is being more frequently used, and with excellent results. This, however, has several unfortunate drawbacks, because, in order to be used efficiently it is necessary to cauterize freely along the whole course of the sciatic nerve. Naturally this causes much inconvenience and trouble to both physician and patient. Another very common drawback is the fact that the cautery is not always easily obtainable by the general practitioner.

It has been found that the pain present in these conditions is best relieved by heat when it is possible to apply it at a sufficiently high temperature. From its use we have none of the depressing effects such as are not uncommonly seen accompanying the use of phenacetin, or antipyrin; nor is there danger of the formation of a drug habit as may be the case when morphine is used. Further, the desired result is always attained, together with a marked and permanently improved circulation.

Various Methods of Applying Heat.

There are numerous ways of applying heat as a therapeutic measure. It may be given both moist and dry. My experience has demonstrated to my own satisfaction that in the majority of cases dry heat gives better results. The fomentation has many advantages—ease of application, convenience, simplicity, etc.; but its use does not permit of a sufficiently high and lasting temperature. It must be frequently changed, and this entails considerable work and bother. Compresses, too, are of a considerable service, but here again the temperature obtained is only slightly above the ordinary body temperature. The use of hot air locally and as the Russian bath has its admirers, and its use does in many cases render most effective service. The principal disadvantage is the fact that considerable time is required to administer the treatments, and the cumbersome apparatus necessary to give the necessary applications.

In rheumatism the joints and, if necessary, the limbs may be advantageously kept surrounded with warm, dry flannels, carded wool or cotton. In sciatica the limb is best incased in a thick dressing of absorbent cotton, snugly bandaged with a gauze bandage and kept hot with hot water bottles, hot plates or irons applied along the outside. Of course

the proper internal treatment combined with complete rest in bed, should always be used in conjunction with this treatment.

In the treatment of these diseases we have been greatly handicapped by the lack of convenient methods, and a means of applying heat at a sufficiently high temperature without trouble and serious inconvenience to the patient. Several preparations have been put on the market, the majority of which depended upon some irritating ingredient for their therapeutic value. Most of these have fallen so far short of the claims made for them that the profession has grown rather skeptical as to their several values. Some time ago a preparation called Hyperthermine was obtained, from the use of which I have derived remarkably good results, especially when used as a local application in the treatment of the diseases under discussion here.

This is a solid substance, composed of various waxes and resins which, when heated, becomes liquefied and may be applied hot to the skin. It does not burn, and its use seems to cause practically no inconvenience whatever. On cooling it forms a collodion-like dressing. Upon investigation I learned that this material, under the name of "*L'Ambrine*," has been used in a number of leading Paris hospitals for nearly ten years, with most excellent results. It seems strange that so little has been heard of it in this country. Its originator, Dr. Barthe de Sandfort, a retired French naval surgeon, is a recognized Parisian medical investigator and scientist, and through his influence this product has been adopted in both the French army and navy.

How to Apply the Dressing.

I have used Hyperthermine in a number of cases of sciatica at a temperature of from 22° F. to 240° F. The technic of applying this hot dressing is as follows. The substance is heated until it is liquefied. It is then painted with an ordinary thin, flat paint brush along the nerve trunk from the sciatic notch along its entire course. Over this is laid a very thin, filmy layer of absorbent cotton. Several alternating layers of Hyperthermine and cotton are then made and the whole is covered with a snugly applied roller bandage. Sometimes it may be well to envelop the whole with flannel. If this is done properly the pain is almost instantly relieved. I have used this dressing at a much higher temperature, but whether one goes beyond 240° is a matter of judgment which an experience with a number of cases alone can teach. Personally, I have secured the most gratifying results at the temperatures mentioned above. Contrary to one's expectations, the use of this preparation leaves absolutely no burn or mark of any kind.

In rheumatism and gout and, for that matter, in all cases where there are stiff and painful joints, Hyperthermine may be most advantageously used in conjunction with a hot-air apparatus. The technic

is essentially the same as that suggested for the treatment of sciatica. The joint or joints are covered with alternating thin layers of Hyperthermine and cotton and the whole carefully wrapped in flannel.

Any form of neuritis will respond equally well. Obstinate cases which have undergone many forms of treatment with indifferent results, have much improved under this simple method of treatment. The advantages of the use of suitable hot applications cannot be too strongly emphasized in the treatment of a large majority of inflammatory conditions. More gratifying results would be obtained by physicians if heat were judiciously employed whenever indicated, and the necessity for causing prolonged suffering or the need for depressing drugs would be obviated to a great extent.

509 West One Hundred and Forty-second street.

A NEW METHOD OF TREATING EXOPHTHALMIC GOITER: A PRELIMINARY REPORT.

BY MILES F. PORTER, M. D., FORT WAYNE, IND.

It is now some three years ago that I first conceived the idea of treating certain cases of goiter by the injection of boiling water. Following the suggestion of Dr. John Wyeth, I had used it in some cases of inoperable malignant tumor and in angiomas, and it occurred to me that the same treatment could be used to advantage, especially in those cases of exophthalmic goiter that were in such desperate condition as to preclude anything like a major surgical operation. I first suggested the treatment at the meeting of the Southern Surgical and Gynecological Association in St. Louis, December 1908.

The injection of hot water into vascular growths was known to be without danger. It had also been shown that there was no danger of producing sloughing of the skin if the injections are not made into or just beneath the skin. The only fear that I entertained in my mind was that there might possibly be a rapid absorption following the injection, giving rise to serious symptoms of hyperthyroidism.

Experiments on Dogs.

Before using the treatment on the human, I concluded to try it on the dog. The experiments were made for me by Dr. H. K. Mouser, who was then the resident physician at the Indiana School for Feeble Minded Youth. In all, three dogs were used, one of which had a large goiter. I cannot here give the details of the experiments, but will say that there were no untoward symptoms following the injection in any of them; that the amount of boiling water injected was 40 minims and that one of the

dogs (a puppy) had a large goiter which entirely disappeared. In one dog the normal thyroid was made to disappear.

An Interesting Experience.

I have used this method in a case of exophthalmic goiter in a woman, who, at the time of the operation, while confined to bed, had a pulse rate varying from 80 to 120. She was under the care of Dr. McCaskey, and as she did not improve under the ordinary treatment he asked me to inject the goiter with hot water. A little over four weeks ago I injected into each lobe of the goiter, which was very small, 40 minims of boiling water. There was no reaction. The patient was asked to remain in bed for a few hours, after which she was allowed to get up and be about. She left the hospital a few days later and has been under observation since. I saw and examined her this morning. The right lobe of the gland is much diminished in size, the left, slightly, if any. She is doing ordinary housework and says she has had no difficulty with her heart. I saw her shortly after she arrived at the hospital, found her pulse 80 per minute and of good quality. She expressed herself as feeling well. I may add that she has gained in weight since she left the hospital.

The technique and precautions are the same as those used in the injection treatment of angioma. I used an ordinary hypodermic syringe. A special instrument could be readily made that would be much more convenient, but I do not feel like having one made until I am assured that the treatment is all that one can hope for it.

This Method Is of Value.

This treatment is especially indicated because of the fact that it is without danger, is practically painless, and does not confine the patient to bed. As it appears to me, there are two classes of cases of exophthalmic goiter, in which, it is especially indicated, first, the very mild cases that are not usually subjected to any surgical intervention, and, second, the desperate cases in which even the ligation of one artery is fraught with considerable danger.

This preliminary report of course is not at all complete, but it recites all the material facts so far as they are known to me.

Face your deficiencies and acknowledge them, but do not let them master you. Let them teach you patience, sweetness, insight. When we do the best we can, we never know what miracle is wrought in our own life, or in the life of another.—Helen Keller.

RADIOTHERAPY FOR THE GENERAL PRACTITIONER.

BY E. GARD EDWARDS, M. D., LA JUNTA, COLO.

Once upon a time the writer had the temerity to present, before a meeting of one of the national electro-therapeutical societies, a paper entitled "The General Practitioner His Own Radiographer," whereupon he was severely criticized by several specialists for propounding an idea, as one expressed it, "dangerous to the welfare of both the profession and the public." This paper has not the province to defend the position taken in that matter, but as firmly as the writer believes that radiography should be of the general practitioner's work, so does he believe that radiotherapy is as much a part of the armamentarium of the general practitioner as any of the other agencies at his command, either physiological, psychological or medical. The X-ray is a force capable of measurement as to dosage. The amount may be varied to the personal equation of the patient, as are drugs, and the science of its application is no more intricate than the latter.

The fact is that quasi-specialists seek to surround its use by a show of mystery and to terrorize the average practitioner by lurid tales of dangers that, in its reasonable and careful use, do not exist.

Conditions are such nowadays that the successful general practitioner cannot depend alone on therapy confined to the contents of a medicine case. In no profession has there been a more rapid advance than in medicine, and our knowledge at this time teaches us that for many morbid conditions, especially skin lesions, the quickest method of relief lies outside of the domain of drug therapy. So, too, skin lesions and morbid growths constituting as they do a fair per cent of the cases seen by the general practitioner demand of the physician an up-to-date method of treatment, more particularly those of the profession who cannot, by reason of their location, conveniently refer such cases to a skin specialist; and, too, because a dollar in the pocket of the general practitioner jingles just as much as it does in that of the specialist.

Slick-tongued agents and unscrupulous dealers represent the management of an electrical equipment as a rosy dream and a quick route to affluence. There are probably as many rusted and cob-webbed equipments throughout this country as there are those in use. Still it is no criterion to go by if the ne'er-do-well fails of success in radiotherapy. The man who gets down and digs until he understands the mechanism of his equipment, who realizes that he can promise much but guarantee nothing to his clientele, will obtain a large amount of satisfaction both for himself and the patient from the use of radiotherapy.

As to the choice of equipment, all in all (except in locations where the electrical current is not available) the writer would select a coil,

rather than a static machine. The two great advantages are the assurance of being able to operate it under all weather conditions and the fact that it is less expensive to purchase. The disadvantages are the greater liability of producing X-ray burns and the greater wear on the tubes. A coil has the added advantage of occupying less room than a static machine, a consideration of importance to most practitioners.

Tubes for most skin lesions must be kept at a low vacuum. For morbid growths—from medium to high. The treatments must be given often enough to produce a continuous effect, usually every other day. Sitzings should last from 8 to 10 minutes, with the tube five or six inches from the point to be treated, unless in selected cases the contact method is followed.

The X-ray burn must be kept in mind, but with any reasonable care they need not occur. After a few treatments, allow the patient a short rest for observing the effect already produced and you will seldom be obliged to discontinue on account of a burn. For many lesions it is necessary to produce a dermatitis.

Care should be taken to make no rash promises as to the length of time required to effect a cure. In fact the beginner must study his subject as he did his materia medica. There are a number of books now on the market, a diligent study of which, together with a good working equipment, will so ground him in the essentials of the work that a little practice will make him successful in this particular line of therapy.

The following cases, reported in brief, are taken at random from case records and are given to illustrate the idea advanced, namely, that radiotherapy is a practical therapeutic measure for the general practitioner:

TUBERCULAR LARYNGITIS. Middle aged man. Condition in general very fair except pulmonary tuberculosis. Twenty-nine treatments, high tube. Great improvement. Condition not verified by laryngoscopic examination, so that diagnosis may have been in error. Moved to Colorado Springs, and after living there for 1½ years returned east. He was seen by the writer a few months ago and was the picture of health.

ECZEMA (BACK OF HAND). Patient middle aged man and a high liver. Cured only after 30 treatments, low tube. First few treatments apparently produced a beneficial effect but subsequent treatments, until after 20 were given, were not productive of curative action. There has never been a return of the trouble.

GOITER. Patient young lady. No results after 12 treatments, high tube. Patient ceased to report for treatments.

GOITER. Patient lady, aged 54. Had been troubled with the growth for several years. Previously treated with negative cataphoresis (Pot. Iodide) without effect. Continued raying at irregular intervals, 30 treatments in all, using high tube, produced a decrease of one-half in size, but further treatments were of no avail.

BRACHIAL NEURITIS. Relieved only by hypodermics of morphine or

large doses of codeine and phenacetine. High frequency, Leucodescent light, vibration, internal and external medication produced no permanent results. Seven treatments, one daily, for 10 minutes, high tube, effected a cure.

LUPUS (NOSE). Given 18 treatments, low tube. No return.

ACNE (FACIAL). Young lady, lose 4 years' standing. Nineteen treatments, low tube. Each treatment, followed by high frequency for 10 minutes. Complete relief.

TUMOR (BREAST). In a young married woman. Variety unknown. Size of two large peas. Twenty-two treatments, high tube. Complete disappearance and no return.

HODGKIN'S DISEASE. Female, middle aged. Thirty treatments, medium tube over enlarged glands, high tube over liver and spleen. No results.

LUPUS. An aggravated case. Relief very rapid after a dozen rayings, using low tube. Patient removed from town and treatment continued by another physician. At one time practically cured, but I understand that some of the affected areas reappeared, though in a milder form, at a later date.

RODENT ULCER (CHEEK). Twenty-eight treatments, low and medium tubes. No return after 3 years.

ECZEMA (CHRONIC) OF FACE AND WRISTS. Elderly lady. Twenty treatments, low tube. Cured for about a year, then returned. Again rayed, 9 times, low tube. No return for 2 years. Later returned on hands but not on face.

TUMOR (BREAST). Middle aged lady. Diagnosis uncertain. Growth size of filbert. No involvement of axillary glands. After 30 treatments, by high tube, this was reduced to size of a pea. Circumstances called patient away and I have no knowledge as to the after history of the case.

GOITER. Patient young woman. Cured after 26 treatments, high tube.

ACNE (FACIAL). Young girl. Cured after 19 treatments, low tube. Disease returned in six months in a milder form.

TUBERCULAR TESTICLE. Patient in advanced stage of tuberculosis. Fistulous opening through scrotum. Thirty treatments, high tube. Undoubtedly improved but not cured. This case was afterward cured by a long course of high frequency treatments.

TUBERCULAR LARYNGITIS. In a young man. Moderately advanced. Records lost as to number of treatments but no result after a month's treatment, high tube.

VARICOSE ULCER (ANTERIOR TIBIAL REGION). Young man. Six years' standing, following typhoid. Not cured by varicose lines of treatment. Given 16 treatments, low tube. Complete healing. Patient resumed use of elastic stocking and had had no return one year later.

ACNE (GENERAL BODY). Possibly an error in diagnosis. Given 40 treatments with complete relief. Owing to extent of surface involved the patient was necessarily exposed at least three-fourths of an hour twice a week. Low tube was used. A heavy dermatitis resulted, which soon disappeared. At no time was it possible to detect any toxic symptoms as result of the raying.

CANCER (ORBITAL). A recurrent case which had been subjected to cancer paste treatment. No result from 16 treatments, low tube.

KELOID (FOREHEAD). Female. Six years' duration. Given 54 treatments. Complete recovery. No return after 6 years. This case was treated in rather a haphazard manner, tubes used ranging from very low to almost high.

TUBERCULAR (?) GLANDS (NECK). Medium tube used. Glands only moderately enlarged. Patient in good physical condition. Left town after 20 treatments. Swelling was subsiding but case not cured at time treatment was discontinued.

ROSACEA. Female. Twenty-four treatments, low tube, combined with high frequency, effected a complete cure.

EPITHELIOMA (LOWER LIP). Thirty-two treatments, low tube. Growth was small and of recent origin. Absorbed after 20th treatment but treatments continued, once a week for 3 months, as a procedure of safety. Treated six years ago and no return.

SARCOMA (MAMMARY GLAND). Adult male, 54 years of age. Case so diagnosed by a number of physicians. Given 44 treatments, high tube, over quite an interval of time owing to recurrent dermatitis. Cured. Patient was afflicted with nephritis from which he died two years later, but had never had a return of the growth.

TUMOR (BREAST). Diagnosis uncertain, probably adenomatous. Lady aged 46 years. Growth size of filbert, freely movable and somewhat painful. Thirty-three treatments, high tube. Cured.

CANCEROUS GLANDS (CLAVICULAR). Following operation, removal mammary gland for carcinoma. Rayed on an average of twice a week for a year and a half. The supra-clavicular glands were noticeably enlarged. This line of treatment reduced the size of the glands by two-thirds. Owing to the distance of the patient from the office, some eighty miles, it was impossible to force the effect by more frequent treatments even had that procedure been possible. Incidentally, a moderate sized goiter which the patient had disappeared. Case relapsed after 18 months.

KELOID. Patient young man. Keloid caused by cut from barb wire. Removed by wide incision but promptly returned. Given 20 treatments over a period of 4 months. When patient was last seen, only a faint, raised area was perceptible and to all intents the case was a cure.

TUBERCULAR OSTEOMYELITIS (HEAD OF FEMUR). Rayed very regularly for four months, with high tube. There was a perceptible improvement but questionable whether due to X-ray treatments. This case was afterwards cured by bismuth paste injections.

GOITER. Young lady. Twenty-seven treatments, medium tube. No improvement.

PRURITIS VULVAE. Eight treatments, low tube. Treatments discontinued owing to violent dermatitis which threatened to develop into a burn. Complete relief.

PRURITIS ANI. No cause found. A chronic case. Cured by 12 treatments, low tube.

RODENT ULCER. Fifteen treatments, low tube. No return after 2 years.

ADENITIS (INGUINAL). Female. Non-specific, non-gonorrheal, bilateral. No general adenitis. Sixteen treatments, medium tube. Complete disappearance.

SYCOSIS. Four weeks' duration. Cured by 7 treatments, low tube.
HERPES ZOSTER (CHEST). Applied for relief from pain after failure of galvanism. Complete relief after 3rd treatment.

TUBERCULAR OSTEOMYELITIS (SHAFT OF FEMUR.) Operated several years before and given tuberculin. Sub-acute attack. Very slight rise of temperature and pulse. Pain intense, apparently a true bone pain. No relief from a month's confinement to bed with dry hot air and high frequency treatments. Given 18 treatments with high tube. Relief from pain after 6th treatment. No return in 2 years.

ACNE (FACIAL). Young man, 6 years' standing. Twenty-two treatments, low tube. Complete cure. No return.

RINGWORM (SCALP). Two months' standing. Had resisted medical treatment. Seven treatments, low tube. Cured.

ACNE (FACIAL). Adult female. Fifteen treatments, low tube. cured.

TUBERCULAR LARYNGITIS (ADVANCED). Twenty treatments, high tube. Undoubtedly relief from pain. Not cured.

HYPERHIDROSIS (FEET). Several years' standing. Twelve treatments, medium tube. Complete recovery.

ADENO-SARCOMA (BREAST). Patient, aged 54. Two years' standing. Given 20 treatments, high tube, with a marked reduction in the size of the growth. Patient concluded process was too slow and had the growth removed surgically.

HERPES (PENIS). Case of 2 years standing that had resisted any and all kinds of treatment, including circumcision. Twelve treatments, low tube. Complete recovery.

TUBERCULAR GLANDS (Neck, left side only). Moderately enlarged. Patient in good physical condition. Thirty treatments, medium tube. Glands barely perceptible at time treatment was discontinued. Three years later glands were normal.

ECZEMA (FACIAL). Small patch on cheek. Several months' standing. Patient middle aged lady. Had always been able to obtain relief, but not a cure. Given 9 treatments, low tube, combined with high frequency. No return after 6 months.

ECZEMA (SCROTAL). This was an obstinate case, but was cured to stay cured after 26 treatments, low tube.

PROSTATIC ENLARGEMENT. Moderate. In a subject 54 years of age. No relief after 17 treatments, high tube and treatments abandoned.

HYPERTROPHIED TESTICLE. Probably due to gonorrhea. Six years' standing. Twenty treatments, high tube. Cured.

EPITHELIOMA (LIP). Patient 54 years of age. Return of growth after use of caustic. Given 19 treatments. Owing to continued asthma, patient was obliged to seek a higher altitude. At that time the growth was reduced from 1-3 of the whole lip to a point scarcely larger than a pencil end. Case turned over to another physician, who later reported further improvement.

A resume of these cases shows: 35 cases cured, 6 cases relieved and 9 cases unimproved. Probably the report could be improved upon by a better technique, but as it stands, it far exceeds the results of any other line of treatment for the same class of cases of which the writer has a personal knowledge.

BACTERIAL VACCINES IN GENERAL PRACTICE.

BY G. H. SHERMAN, M. D., DETROIT, MICH.

My personal experience in the treatment of disease with bacterial vaccines extends over a period of nearly four years, during which time I have used nearly four thousand doses in a large variety of cases. Having a complete laboratory equipment for making vaccines I frequently use autogenous vaccines, but have had a much more extended experience with stock vaccines.

Without a doubt many cases can be successfully treated with stock vaccines when the organism from which to prepare an autogenous vaccine can not be procured. The delay in the treatment of acute infections in which the organism can be obtained during the tedious preparation of the vaccine is a decided disadvantage.

The next practical field for the administration of autogenous vaccines is in the subacute and chronic infections, where the infecting organism can be procured.

The Advantages of Stock Vaccines.

To delay treatment until a bacterial examination can be made, especially where facilities for such work are not at hand, is not advisable, because in the meantime the infection may reach a point where it can no longer be brought under control. If the infection has advanced to a point where the patient is in a state of collapse with a weak rapid pulse and declining temperature, showing a depressed condition of the nerve centers from the effects of the bacterial poison in the blood, no beneficial results should be looked for. From theoretical grounds some consider vaccines contraindicated in such cases. It would be difficult to demonstrate this clinically, because such cases usually died under any treatment. It is for this reason that vaccines should not be used as a last resort, but rather should be used early to prevent the development of such conditions. The beneficial results of vaccines in acute infections when given early can no longer be questioned.

Where mixed infections are found, mixed vaccines corresponding to the various organisms should be given. Vaccines are harmless when no corresponding infection exists; that is the administration of, say, dead colon bacilli in a streptococcus infection gives no unfavorable result. For this reason in cases where a definite diagnosis can not be made a mixed or multivalent vaccine, corresponding to the various organisms that are liable to be present, may be given.

Selection of the Vaccine.

A diagnosis can usually be made from clinical symptoms. There is not much difficulty in the recognition of erysipelas. Wound infections

are usually caused either by the streptococcus, the staphylococcus or a mixture of both. Streptococcus infections have a tendency to spread rapidly, while staphylococcus infections are more confined to the point of infection. Tetanus infections cause little or no local disturbance. Where we have a penetrating wound, such as that caused by tramping on a nail, followed by much inflammation with pus, we are practically safe in excluding tetanus and considering the infecting agent streptococcus, staphylococcus or an infection due to both organisms.

In a large majority of severe cases of tonsillitis, laryngitis, otitis media, mastoiditis and bronchitis the streptococcus is the real underlying pathogenic organism. The pneumococcus is also frequently found in these cases. In broncho-pneumonia we have the streptococcus and pneumococcus or a mixture of these organisms to deal with. This is also frequently the case in pneumonia. Streptococcus infection is the real danger in puerperal fever and should always be guarded against. Colon bacilli practically always cause a bad odor to a discharge; staphylococci may also be present.

It has been long known that the streptococcus is the pathogenic organism causing bad throat complications in severe cases of scarlet fever. These cases are now being successfully treated with streptococcus vaccine. Cases of nonsyphilitic iritis may safely be considered as being a streptococcus infection. Acute articular rheumatism is now being classed among the infectious diseases being caused by a coccus. Whether this organism is the streptococcus pyogenes, a diplococcus or a specific coccus, the so-called micrococcus rheumaticus is not definitely settled. The fact that good results are being obtained in treating rheumatism by the use of a streptococcus vaccine indicates that rheumatism is either a streptococcus infection *per se*, or at least associated with a lowered resistance to this particular organism.

Regulation of the Dosage.

The opsonic index is neither necessary nor advisable, clinical symptoms being just as reliable a guide as to when the vaccine should be repeated. In acute streptococcus, pneumococcus and staphylococcus infections I find the following a good average rule: Treatment should be started with an average dose and given early in the course of the disease. In most cases the temperature drops within 24 hours after the first inoculation, with other associated conditions improving. If the temperature rises again after a material drop another dose should be given. If the case progresses favorably the dose should be repeated on the second or third day after the first inoculation. Where no material improvement is noticed within 24 hours after the first inoculation another dose should be given.

In subacute and chronic infections I find it well to repeat the inoculations at intervals of from five to seven days.

The vaccine treatment of disease differs radically from ordinary medication in that bacterial emulsions are real curative agents, while medicines only give relief while nature is attempting to effect a cure. Vaccines stimulate the immunizing mechanism into activity and thereby hasten the establishment of an active immunity to the organism from which the vaccine is prepared.

With ordinary precautions, such as not giving too large an initial dose and not repeating them too often, the vaccine treatment is absolutely harmless. From the thousands of doses I have given I have never seen any bad results that could be attributed to the vaccines. This has also been the experience of many others who have used this method extensively.

CONSTIPATION: A DISTURBANCE OF METABOLISM.

BY HENRY O. BEESON, M. D., SAN ACACIO, COLORADO.

Constipation is the most prevalent ailment of civilized man. In its most restricted sense the term means a reduced action of the bowels which may be complete or incomplete. This understanding of the word is misleading, in that it creates the impression that mere failure of the bowels to move is the real disorder. As a matter of fact, this is but the expression of an underlying condition referable to metabolism, and which affects all glandular activity detrimentally. To seek the cause of constipation in the mere fact of delayed discharge of the rectal contents is to view the subject in its most restricted sense. The term should be used in its most comprehensive meaning, that of defective elimination. In fact, it should be regarded as a mere symptom of disorder that refers to essential vital processes connected with digestion and nutrition.

A Complicated Condition.

It is self-evident that when digestion and nutrition are right that constipation cannot exist, and it is a matter of constant demonstration that dyspeptics are constipated, and that one condition rarely exists without the other.

Dropsy was for a long time considered a disease, but the light was let in and it came to be recognized as only a symptom of circulatory obstruction referable to organic and, consequently, functional disease of the heart, kidneys or liver. In like manner, constipation should be recognized as but a symptom of deranged nutrition by which glandular activity is reduced. And it is plain that its successful treatment contemplates more than the mere procuring of an evacuation of the contents of the bowel. It is significant that cases of this disorder that are treated with evacuants are not cured but merely relieved temporarily. The object of treatment is the cure, the permanent cure, of this affection.

I feel prepared to defend the assertion that this can be accomplished by a proper selection of the diet based upon the deprivation of certain food materials that stand as causes of the defective elimination upon which the symptom of constipation depends. I deny that foods and drugs that are in themselves laxative are curative. I affirm that increased elimination is palliative but not curative. That is, I mean stimulated elimination. I affirm that the deprivation of those materials that are productive of chronic subelimination is the paramount demand, and not the use of foods and drugs that are stimulant to the emunctories.

I claim that the tonic effect of remedial measures and medicines can best be obtained by withholding those elements of the diet that are responsible for the eliminative insufficiency. The grate cannot be cleared of clinkers as long as clinker coal is fed to the fire.

The subelimination is due to the presence in the system of deleterious substances, and that these deleterious substances are derived primarily from the food supply, is a proposition that is too apparent to admit of discussion.

It being understood that the cause of subelimination rests with the food supply, the remedy must be sought in the diet, and not in tonic and laxative drugs, or, for that matter, in coarse foods, exercise, massage, habit and such currently taught measures. I am not denying the utility of these measures, but they alone, without regard to the underlying factors producing the condition of subelimination, will not succeed.

There is something to take away rather than something to add to the patient's bodily demands. House living, bad air, wearing clothes and other attributes of civilization can hardly be advanced as reasons for the widespread constipation that afflicts civilized man, because the farmer class, living and working in the open air, uncontaminated by the so-called crowd poisoning, living on the freshest of farm products, suffer from this affection in like proportion with the city dweller.

Present Day Ideas Faulty.

This is a lamentable reflection upon the science of medicine, and it is regrettable that our teachers give us no efficient treatment for it. The usual advice to give tonic laxatives and to use a diet rich in cellulose is unscientific and illogical, and utterly fails to give more than temporary relief. These methods have always failed in my hands and I am sure they must have failed in the hands of others.

It is strange that no one of our teachers has been impressed by the fact that increased elimination is the object of practically all medicinal treatment employed by physicians. It makes but little difference what the diagnosis may be, the physician writes a prescription for some kind of an eliminant for about every patient he treats. It seems that the idea

might have entered the minds of some that the study of the factors contributing to the production of subelimination would solve the problem better than mere efforts to stimulate the discharge of the offending material, the accumulated surplus of food constituents, augmented by katabolic waste.

There can be no question that subelimination is at the bottom of constipation as well as ninety per cent of the disorders that afflict mankind. This is shown to be true by the fact that from fifty to ninety per cent of the prescriptions that are written by physicians are for some kind of evacuant, either acting upon the bowels, the kidneys or the skin, the chief avenues of escape from the body of waste materials.

If subelimination is such a common ailment, it certainly looks as though it was important enough to demand our serious consideration concerning its prevention. The medical profession can rest assured that if it does not take up this subject and study it in the future along more rational lines than it has in the past, that forces outside of the profession will compel it to recognize a science of dietetics based upon physiological truths.

The measure that must accomplish the cure of constipation is a comparatively simple one if properly understood. But if not understood, no amount of medical treatment, exercise and change of occupation or climate, laxative foods and the like will give any more than temporary benefit. The usual treatment with tonic laxatives and coarse foods rich in cellulose, fruits, massage and open-air exercise does not cure, because such measures operate upon the effects rather than upon the cause.

Osmosis an Important Factor.

The fundamental cause must be looked for in the disturbances of metabolism by reason of which the osmotic tension is disturbed. As a result of this osmotic disturbance, nutritive and eliminative insufficiency exist, and, as a legitimate consequence, glandular action is retarded, digestion suffers and the physiological processes are in discord.

Waste matter accumulates by reason of reduced elimination, and a vicious dietary adds fuel to the fire by the ingestion of food when it is not needed, in quantities that are harmful, and in kinds that are disturbing to osmotic tension. It should be borne in mind that normal cell integrity and action can only be obtained when the fluids and cells are in a proper osmotic relation. When the fluid is of a greater saline density than the cell (tissue or blood), the cell will give up some of its water to dilute the surrounding fluid to a density consistent with the integrity of the cell. The loss of water reduces the ability of the cell to perform its functions for a time until the emunctories can discharge the offending material. If this necessity of recovering lost ground is imposed upon the cell and

the excretory organs three times daily by the use of a wrong system of dietetics, it should be very plain that pathological changes that are permanent must ensue sooner or later.

A principal factor contributing to these osmotic disturbances is the insomnia, coated tongue with variable appetite and stools. There may this has been constantly overlooked. It is true that these organic mineral compounds are essential to nutrition, but it is not true that they can be present in excess and remain harmless. The law of osmosis is as immutable as the law of gravity. We have been too much inclined to confine our ideas of osmosis to laboratory experimental researches, and to forget that all metabolic changes that take place in the human organism do so in obedience to this law. We have seen that the blood and tissue serum maintain within very narrow limits (less than one-half of one per cent) a fairly fixed density. We know that it is not possible to disturb that density to any material extent without resulting in harm. We also know that when a great surplus of crystallizable material is added to the body that it is promptly discharged by vomiting or purging, or both; and when the amount is not sufficient to produce emesis or catharsis, the offending material is excreted in a slower manner by the kidneys, the skin and the mucous discharges.

We might see, if we were not blind, that when the surplus is not sufficient to produce any marked excretion by these organs, that they are silently overburdened daily, and only cry out in distress when they have become worn out by the constant strain to which they have been subjected, until finally by the accumulated surplus, augmented by the body waste, they break down in structure and function.

The most usual symptoms are headache, restlessness, nervousness, insomnia, coated tongue with variable appetite and stools. There may also be mucous membrane irritation leading to secondary infections, hepatic or renal disorder, neuralgia or rheumatism; but, by whatever name the disorder or disorders may be called, the doctor usually prescribes an eliminant, and the patient feels relieved, and would be well or cured but for the failure of the physician to direct the discontinuance of certain food constituents that precipitate the disorder again as soon as the osmotic tension is raised above the normal.

To better understand this normal tension, let us examine the normal ash content of the human soft parts. The bones are left out of this consideration because they are fixed deposits that have nothing to do with the state of the fluids elsewhere in the body.

According to authorities who have given us the chemical constituents of our bodies, the soft parts contain an approximate ash or mineral content of about one per cent, half or more of which is sodium chloride. In obedience to the immutable law of osmosis, when the food is of greater

saline density than the blood, there is a transudation current outward in the direction of the denser fluid, and absorption cannot begin until this exosmosis equalizes the osmotic tension between the opposing fluids. In other words, when the food saline content is greater than that of the blood and tissue serum, digestive fluids are not formed as promptly or as efficiently, absorption is retarded and indigestion exists, because the fluid is transudation fluid, in whole or in part, and is not digestive.

Foods vary greatly in their mineral content, and this contention is amply borne out by the fact that those foods that are of high mineral value are not well borne in a continued diet, and are sure to create digestive and eliminative disorders if used often or long. Notable among these foods may be mentioned the pulses, oats, cow's milk, nuts and some fruits. Only those who labor in the open air can endure these foods for any considerable length of time.

Cow's milk is in some sense an exception, but this is because the ash is lower than in the other foods mentioned. Human milk contains but about one-half of the ash that cow's milk contains. German pediatricists have clearly shown that much of the disturbing element in cow's milk is rather the ash than the casein.

Wrong Food Combinations.

The disturbing effects of fruits are as much due to the manner of their use as to the excess of acids and the salts. Habitually eaten with starches, they hinder digestion by their acid reaction in the digestive juices, starches requiring an alkaline reaction. Fruit alone can often be well borne, when disorder would result if eaten at a meal with starchy food. This is because starch can only be digested in an alkaline fluid, and the digestive efficiency is lowered by the addition of an acid.

It is true that the gastric acid secretion will increase the alkaline pancreatic secretion, but the increase is doubtless due principally to the necessity of keeping the intestinal juices in alkaline reaction to thus neutralize the acid current from the stomach, than to the direct stimulation of the glands by the acidity. It is well known that acids do not stimulate glandular activity. Alkalies, on the other hand, are our best glandular stimulants.

A piece of rubber put into the stomach will promptly and efficiently stimulate the gastric glands to activity, but the secretion stops when it is not used up. But when food is put into the stomach, the first juice is used up, a need exists for more to take its place, and the glands continue to be active as long as there is a demand for the digestive fluid.

The cure of constipation being based upon a proper proportion of ash or earthy matter, it is plain that food must contain these constituents in approximately the same proportions as found in our bodies. This means that the ash tables must be studied in food selection, rather than

the totals of carbohydrates, fats and albuminoids. The object of this selection is to avoid the osmotic tension and discord, so that all nutritive processes may proceed without hindrance.

Need for a New Food Classification.

To facilitate this selection, a new classification of foods into neutral and acid is demanded. All of the fruit acids, as citric, tartaric and malic, are not split up into carbon dioxid and water, for the tannic acid series go to form insoluble compounds, while the benzoic acid series form hippuric acid, which acts the part of uric acid in metabolism. Berries are especially apt to cause acidosis by this hippuric acid production. Therefore there must be a consistent consideration of the osmotic relations in the selection of a fruit diet as well as in the selection of other food materials based upon the acid and mineral salt content if osmosis is to be kept free from disturbances.

The neutral foods include those that furnish heat and energy, but leave no chemical constituent behind to be excreted, and to thus disturb physiological nutritive processes. To this class belong the carbohydrates, fats and albuminoids. Starch, sugar and oils are pure heat and energy producers. They contain a minimum of mineral elements, and are easily the leaders in the diet of all peoples and animals. These food elements contain no chemical substances that are left behind after digestion and assimilation or katabolic products that act detrimentally to the processes of nutrition.

Albuminous foods belong to both classes, inasmuch as they contain both the nitrogenous and non-nitrogenous elements. The former are converted into acid by-products of metabolism requiring exudation and basic combinations to render them capable of elimination. And it is this feature of the katabolism of the nitrogenous foods that render them the chief offending factors in the production of pathological subelimination, because their waste products are left in the system to exert their poisonous effects upon the tissues and to increase the capillary obstruction due to increased viscosity of the blood.

Empirically, it is well known that acids inhibit glandular activity, while alkalies promote their action. This is well shown in the clinical use of alkalies in indigestion and malnutrition, as is seen in the treatment of general debility and rheumatism.

When an acid is taken into the stomach it must find a base with which to combine, or it must be of such a nature as to undergo destructive combustion, as with the fruit acids like citric and tartaric. In taking up the base, it thus prevents a proper neutralization of the katabolic acids, and the antecedents of urea are thus left unoxidized and are deposited in the tissues, where the circulation is less free, to exert their poisonous effects in the nature of pain and disturbed nutrition.

It is a well-known physiological fact that urea is the chief excretory product of tissue waste. It is also well known that the antecedents of urea are nitrogenous bodies that are for the most part acid and must be combined or oxidized to avoid their poisonous effects. These bodies are derived from the body waste and are also supplied in more or less abundance as food materials.

Xanthin Bodies and Their Effects.

Dr. Haig, for instance, gives a table in which he shows that our flesh food contains them to the extent of an average of about two to three grains to the pound. Cocoa contains 59 grains to the pound, coffee 70, and tea 175. These xanthin bodies are practically universal in the organic kingdom. They are regarded as waste material or by-products, to be cast out of the body in which they originated, just as they are from the bodies into which they are introduced, whether vegetable or animal. They are all poisonous to the animal organism.

In the normal processes of katabolism they unite with the ammonia formed in the tissues and are carried to the liver cells, where they are converted into urea, a harmless product, for excretion. Dr. Haig made the basic mistake of calling this whole group uric acid. From the fact that uric acid, artificially prepared, can be given in very large doses without harm, physicians have looked upon his uric acid theory lightly. There can be no question that the retention of the unoxidized purin bodies stands in a prominent causative relation to neuralgia, rheumatism and other disorders due to metabolic errors.

Systemic acidosis is the legitimate outcome, and the capillary circulation is obstructed, thus impairing nutrition and inhibiting glandular activity.

By whatever name the condition may be called, it is one of inadequate oxidation and retention of purin bodies, and constitutes the chief factor in the production of biliousness, indigestion, rheumatism and the thousand and one disorders that exist among civilized peoples. It should be very plain that a surplus of the mineral and acid elements must act detrimentally upon nutrition by utilizing the basic elements, leaving the metabolic acid elements uncombined, and, consequently, incapable of being excreted.

"Neutral" Dietary Required.

Now, the treatment of subelimination, whether called by the common name of constipation or what not, demands a food supply not only as free as possible from xanthin bodies, but also containing a minimum of mineral salts and certain vegetable acid elements or alkaloid substances, to the end that the acid waste products may find easy access to the bases and the oxygen in the processes of internal respiration, to be thus converted into products capable of easy elimination.

Hence, to cure constipation, one must give neutral foods containing the least possible amounts of acids and minerals. Foods rich in cellulose and medicines that are laxative, fresh air and exercise stimulate excretion and oxidation, relieve the symptoms temporarily, but are rarely curative. The Salton lake could only be dried up by turning the river back to its old channel—in other words, stopping the inflow.

The supply must be stopped if accumulation is to be avoided. Foods that are digestively incompatible should not be eaten at the same meal. Starches are digestible only in an alkaline medium, hence acid fruits that augment the acidity of the digestive fluids should not be eaten at the same meal with starch. As far as the mental attitude will permit, foods should not be mixed. A meal should be all of a class. Carbohydrates, starches, sugars and fats may be eaten together with less harm than with the admixture of acids and mineral salts.

Balneotherapy.—Joly in *La Clinique* discusses the advantages derived by patients from residences at spas or baths. Most of the thermal establishments are small villages situated in the open country, thus affording the advantages of pure air and altitude. The action of air upon the cutaneous, respiratory, and circulatory systems is important in restoring the physical functions; aërotherapy, combined with respiratory gymnastics, can be added to the ordinary spa treatment with advantage. This class of gymnastics is of special benefit to patients suffering from some of the disorders of circulation; it tends to regulate heart-beat, while the movements of the thorax and diaphragm have a powerful effect upon the venous circulation, especially in connection with the lower parts of the body. A retarded venous circulation is thus stimulated, and physiological activity is promoted in the viscera by the massage which results from the increased movement. The elimination of toxic products and the alteration produced in the blood has an important effect. Aërotherapeutics are not confined to respiratory gymnastics only; they include heat, light and electric treatment, the application of these means allowing of the functions being decreased or increased, while the action of the skin and nervous system is improved. Air and sun baths should, if the climate permits of it, be used to supplement the water treatment. It is occasionally wise to commence the cure by giving the patient complete rest in bed for a more or less length of time, after which he will derive help from carefully arranged physical exercises, walking, and when desirable, massage. When the waters are being drunk, diet becomes one of the most essential points; it is often modified according to the resources of the neighborhood. In some resorts it is easy to carry out a milk, sour milk, or grape cure, while in all places a diet which is largely vegetarian and fruitarian is to be considered. As a rule there is no advantage in having recourse to drugs during the cure, which ought to rely chiefly upon assisting the patient to obtain the most complete advantage from his surroundings.—*British Medical Journal* (April 30, 1910).

SPECIAL ARTICLE

WHAT WE SAW AT SAINT LOUIS.

The meeting of the American Medical Association at St. Louis was, to all intents and purposes, a successful one. The Commercial Exhibit at the Coliseum was crowded and the individual exhibitions were of more than usual interest to us. We believe, therefore, that a few brief paragraphs about those exhibits that were essentially new and of interest to readers of *PHYSIOLOGIC THERAPEUTICS* might be, with advantage to all concerned, printed here.

Of course, these pages will savor to a great or less degree of advertising, for was not the whole exhibit one huge advertisement? So we trust that we may be the means of introducing many of our readers, who were unable to be at St. Louis, to something that may be of help to them in their practice.

* * *

As usual the W. B. Saunders Company had the best space in the whole exhibition and they did a lively trade. Dr. Tousey's new book on "Medical Electricity" sold very well. It is a masterpiece. We were especially interested in looking through the advance sheets of Dr. Guy Hinsdale's forthcoming work on Hydrotherapy. We were assured that the book would be fully worthy of its author and if we could judge from a couple of hundred pages that were hurriedly scanned, this new book will take the front rank among the works devoted to this important subject. In all probability a copy will be received in time for review in our next issue.

* * *

An ingenious and highly useful Bed Bath was shown by its inventor, Dr. Henry P. Coile of Knoxville, Tenn. The bath consists of an inflatable and collapsible tub made of soft rubber. It is easily folded for transportation and weighs but a few pounds. By means of this bath any patient, no matter how ill, may be safely and efficiently bathed without being taken from his bed. Demonstrations of the ease of operation were made by Doctor Coile, and many visitors were interested. We noticed that some of the city's newspaper men used the possibilities of the bath tub as material for "copy."

* * *

The Randall-Faichney Company, besides having the usual exhibit of thermometers and hypodermic syringes, showed a new life-saver, which goes under the euphonious name of "The Habberley Resuscitator." The main object of this instrument is the reestablishment of respiration in cases of asphyxiation, drowning and collapse during anesthesia. This is accomplished by means of twin pressure and suction pumps, in combination with a mouthpiece and connecting tube, having automatic valves so arranged that with the upward stroke of the handle the air or gas is drawn from the lungs and with the downward stroke air or oxygen is

forced into the lungs. An important feature is the arrangement of valves which precludes the possibility of injury to the lung tissue by excessive pressure or suction. This instrument is not yet for sale, but will be shortly and those interested may obtain further particulars by addressing the manufacturers at 251 Causeway Street, Mass.

* * *

We were especially interested in an exhibit of thermostatic temperature alarms manufactured by The National Clock and Electric Manufacturing Company of St. Louis. These instruments are for use in Hospitals, Sanatoria and sick rooms as a means of keeping the temperature at a designated point, or between two points. A portable instrument was shown which permits the physician to have control of the temperature of his patient's room. By setting the pointers at the maximum and minimum degree of temperature desired a buzzer notifies the nurse of any change in temperature which might be detrimental to the patient. We were pleased to note that the tendency to place an almost prohibitive price on an article, just because it was new, was missing here; the portable outfit mentioned above costing only a few dollars.

* * *

St. Louis has never been highly commended for the purity of its drinking water, and more than once we have heard that they "had to drink beer because the water was so muddy." A striking exhibit showed what a good filter would do to Mississippi river water. Water direct from a faucet in the Coliseum was shown alongside water filtered through the Allen Porcelain Water Purifier. The difference was very evident to both taste and sight. The Allen Filter Company of Toledo, O., in demonstrating their Purifier used a handy little individual drinking cup which some day, in the near future we hope, will become a permanent feature in our railroad trains, waiting rooms, schools, etc.

* * *

The Wappler Electric Controller Company, of New York City, showed a most magnificent wall plate, which immediately took our fancy. Among a dozen or more "features" was a combination which permitted of the administration of a physiologic sinusoidal current. Instead of contracting the muscles as the ordinary "sinusoidal" attachment to a wall plate, this machine causes contractions that are slow and rhythmical and closely simulate the muscular action during normal exercise. We understood from Mr. Wappler that he has just perfected a new interrupter which may cause a sensation. At all events it ought to be worth investigating.

* * *

The H. K. Mulford Company devoted practically the whole of their exhibit to the demonstration of the preparation and packaging of their bacterial vaccines (bacterins). Their most recent improvement has given the profession a package which contains the desired bacterin in graduated increasing doses and in a hypodermic syringe ready for use. This is a distinct improvement on the "cute little bottles" as our patients were wont to call them. Mr. Mulford is sparing no expense to make his already excellent line of bacterins as extensive as possible and to give in a convenient and usable form what we consider to be one of the greatest therapeutic advances in the past ten years. The Bulletins put out by

the Mulford company are worthy of special mention, being continually "revised to date." They are thus a resume of all the clinical and research work done along lines of vaccine therapy, and are so evidently scientific, rather than commercial, that we advise our readers to get copies and learn them by heart.

* * *

We ourselves had an exhibit at Space 82, and did a rushing business. Several hundred copies of *PHYSIOLOGIC THERAPEUTICS*, which were saved especially for this meeting, were distributed to interested parties. We expect many new subscribers as a result of our visit to St. Louis.

* * *

Our next door neighbor—Mr. Mull of the Cabinet Manufacturing Company, of Quincy, Ill.—was kept very busy demonstrating the Walsh Window Tent. In fact, quite often we had to help out when there was too great a rush. Although Dr. Walsh has had his "tent" on the market for several years, he has improved it and it is well worthy of special mention here. The use of this apparatus allows one to sleep out of doors and yet be in the house. In this way the energy which in a cold room would go to fight the cold is saved, while one has all the advantages of the out-door porch or tent.

* * *

Truax, Greene & Company, of Chicago, had the largest individual exhibit in the Coliseum. Four spaces in the center of the building were filled with a thousand-and-one instruments and appliances of various sorts. From occasional glimpses we are lead to believe that they did a big business. We learned that a new edition of their large catalogue is just off the press and any of our readers that wish a copy may receive one express prepaid on request, with a mention of this journal.

* * *

The air purifier, of which we spoke on page 60 of the last issue of *PHYSIOLOGIC THERAPEUTICS*, was very much in evidence at the booth of The Duntley Manufacturing Company, of Chicago. An immense specimen was displayed and we learned that it was similar to a number that have been especially constructed for some of the leading Chicago theaters. Not only does this instrument cleanse or wash the air, but it is arranged so that the air is drawn through a scented solution which gives off nascent oxygen and it is thereby cleansed, vivified and made very pleasant. A special feature which was made much of at the exhibit was the capacity of this machine to reduce the temperature of a room. Of course the famous Duntley Cleaner was also demonstrated and Mr. Foutt must be congratulated upon a very attractive and, we are confident, a profitable demonstration. Hospital and sanatorium heads were much interested, and rightly so.

* * *

A compact, portable High Frequency outfit of unusual power was exhibited by the International Electric Laboratories of Boston. This was a very complete piece of apparatus and evidently designed for all-round use by the general practitioner. Connected to an ordinary lighting circuit it furnishes D'Arsonval current, Cautery, Diagnostic lamp, High Frequency and heavy voltage currents for exciting Crooke's tubes. A number of excellent examples of X-ray pictures taken with this outfit were

shown. By a peculiar arrangement of the various parts, this outfit is enclosed in a small case measuring only $8\frac{1}{2} \times 8\frac{1}{2} \times 16$ inches. "The Browne Coil," as it is called, is well worth investigating.

* * *

The Taylor Instrument Company, of Rochester, N. Y., demonstrated the Dr. Rogers "Tycos" Sphygmomanometer. The handy little instrument consists of a small pressure gauge capable of indicating pressure up to 260 mm. of mercury. The dial looks like that of a steam gauge and is graduated in centimeters, subdivided into halves and quarters. The position of the index hand indicates the pressure inside the instrument. The sleeve is much more convenient than those in general use with mercury instruments, and this, together with the dial feature, makes this apparatus the most compact and accurate blood-pressure outfit yet made. The whole thing folds into a very small space and it can easily be carried in the coat pocket.

* * *

The Macalaster-Wiggin Company (610 Sudbury Bldg., Boston, or 160 Lake street, Chicago), showed a new X-ray tube which is so constructed that it will take a very large amount of current without lowering in vacuum or injury to the terminals. The cathode is very massive and securely supported, while the target is heavier than in any other tube made. The reflecting platinum surface is set into, and in intimate contact with, the copper block, so that the heat at the point of focus is conducted away and dissipated by a large copper radiator which is placed over the end of the tube. This construction renders puncture more remote, hardens the vacuum and permits many exposures in quick succession. This tube promises well.

* * *

In the display of the McIntosh Battery & Optical Company, Chicago, we saw their new Polysine Generator, a most unique sinusoidal apparatus. The incoming supply current is first passed through a rotary converter and the ground connection eliminated, enabling it to be safely employed in a bath tub. This converter delivers both direct and alternating currents, which are passed through a rotary break and resistance unit and are transformed into various forms of sinusoidal currents, plain and compound, as well as surging galvanic currents, the latter being measured by a milliamperemeter, which also measures the straight galvanic current offered. A dial current selector permits of the selection of any one of nine varieties of currents plainly indicated on the dial. We were much impressed with this piece of apparatus and consider it one of the most valuable additions that could be made to the equipment of a sanatorium or office.

* * *

The William Hettich Company, of Chicago (successors to The R. V. Wagner Company), had an attractive exhibit. They had the only static machine in the Coliseum. For this reason their 20-plate machine attracted more than the usual attention. They also showed a new type of coil in which we were much interested. The new catalogue will be ready shortly and we advise our interested readers to get a copy. Address them at 1447 Hudson Avenue, Chicago, Ill.

From a scientific, as well as a commercial standpoint, the Victor Company's exhibit was the most complete in the electrical line. In addition to an extensive line of wall plates, vibrators, therapeutic and diagnostic lamps, portable X-ray coils, high-frequency apparatus, cautery transformers, etc., several pieces of their newer apparatus were demonstrated, which included the Multiplex Sinusoidal apparatus, the Wantz Radiographic outfit and the Victor Combination Compression Diaphragm, Protection Shield and Tube Stand.

The Sinusoidal machine offers all the advantages of a first-class wall plate, and in addition, the sinusoidal current in all its phases, suitable for massaging the muscles, at a normal rate of stimulation.

The Wantz Coil and the Compression Diaphragm were objects of special interest to the radiographer; the coil on account of the vast amount of energy available for rapid radiography, and the Compression Diaphragm because of the wide range of adjustment, protection and rigidity.

* * *

The Roentgen Manufacturing Company, of Philadelphia, demonstrated their well-known Snook Radiographic Outfit. In addition to this they showed a new stereoscopic device for examining X-ray plates and an excellent Localizer. We were much interested in each of these outfits and took the opportunity to acquaint ourselves with their workings. This company's new catalogue is very interesting and attractive and we suggest that our readers write for a copy.

The way we are facing has
everything to do with our destination.

* * *

The greatest thief this world
has ever produced is Procrastination, and he is still at large.

* * *

The doctor must look on the
results of his treatment as the
test of his value, just as with
every other class of worker.—
Medical Standard.

* * *

A man who puts forth effort
accomplishes results; but the
man who puts forth EXTRA
effort accomplishes GREATER
results.

ABSTRACTS AND TRANSLATIONS

HYDROTHERAPY.

Against Frequent Warm Enemata.—Do not allow anybody to use warm enemata habitually. They cause muscular atonicity and the patient's later state is worse than the earlier. Cold water exerts a contrary effect and its use is a wholly rational practice.—*Therapeutic Medicine.*

Cold Douches to the Neck in Rhinitis.—Muck observed when cold water is poured or douched on the back of the neck that a stopped-up nose becomes "permeable" to the air. The blood vessels of the nasal mucous membrane are reflexly contracted. The author therefore employs cold douches to the back of the neck in rhinitis. In acute inflammations of the mucosa, especially in coryza, one can by this means remedy the stopped-up condition of the nose, and thus allow the escape of the secretions. The author further believes that owing to the proximity of the vasomotor and respiratory centers in the medulla these douches also act beneficially in bronchial asthma, especially of nasal origin.—*Münch. Med. Wochenschrift.*

Spinal Douching.—The water used should, to begin with, have a temperature not below 80° F., and be gradually cooled down. If commenced too cold it may give rise to headache or giddiness. The spinal cord appears to be directly stimulated by the shock of the cold water, and the stimulus is reflected to the peripheral and visceral nerves, notably the sympathetic ganglia. This bath is useful in functional torpor, with numbness or slight paralysis of limbs, constipation and phosphaturia, producing a bracing effect and a pleasant glow.—*The Hospital.*

Hot Baths in Superficial Inflammations.—Richter reports his success with the old hot-bath treatment. He has treated 330 workmen with various injuries of the soft parts, felons, furuncles and phlegmons with the systematic use of local hot baths. The writer orders the patient to put the hand, arm, foot or leg into the water as hot as can be borne and to keep it in the water for from half an hour to an hour, pouring in hot water from time to time to keep up the temperature. This is to be repeated several times a day. A little soda, about half a tablespoonful to a quart of water, is added. He believes that the principle of this treatment is about the same as that of the Bier method, attracting the blood more actively to the part to aid in combating the local infection. The results have been extremely satisfactory. Pus was evacuated by an incision at the proper time.—*Münch. Med. Wochenschrift.*

Reducing Temperature in Children Without Drugs.—Nervous irritability in children is calmed down by means of the ice cap or sponging. The best method in managing a feverish child is to place an ice bag at the head and a hot water bag at the feet. This will equalize the circulation.

In order to give the cold sponge all the clothing should be removed and the child placed in a blanket. The sponging should be continued for twenty minutes.

Irrigation of the colon is of great importance in reducing the tem-

perature. This permits the removal of products of intestinal decomposition, carries in fluid for the body and reduces the temperature. Rectal irrigation can be repeated every three hours if the indications warrant. These irrigations are strongly recommended in typhoid fever.

Plenty of fresh air is a valuable adjunct in the management of feverish children. Placing children in the open air for a few hours each day is advocated regardless of the age or the disease from which they may be suffering.—W. C. Hollopeter in *Pediatrics*, January, 1910.

The Carbon-dioxide and Oxygen Baths.—Munk (in Ziehen's Neurological Clinic in the Charite at Berlin) has made a series of comparative studies of the CO₂ and O baths. He finds:

The CO₂ bath is a more vigorous dermal stimulant, and is therefore indicated in disturbed sensibility of the skin. It is the bath for tabetics, though some of them, with thermal hyperesthesia, will do better under the oxygen bath. The CO₂ bath induces a subjective feeling of warmth, and thus enables the use of a cool bath to lower blood temperature, as is frequently desirable in acute processes. The carbonated bath is counterindicated in conditions of excitement.

The O bath is a mild cutaneous irritant, and is strongly sedative. Its field of usefulness, therefore, includes all condition of increased motor excitability. As it seems to raise muscular tone, it appears appropriate in hypotonia, and the relaxed forms of paresis, but not in spastic paresis or paralysis. It induces a subjective feeling of coolness, which permits the bath to be given to patients who are sensitive to high temperature, as in diseases with excessive metabolism and vasomotor disturbances. It will probably prove especially valuable for the symptomatic treatment of Graves' disease. To its cooling effect must probably be ascribed the success reported from its use in neuralgia, neuritis and other painful affections. This effect resembles the analgesic action of the menthol pencil in neuralgia.

The favorable influence of this measure on vasomotor disturbances is beyond doubt; but even if only the subjective effect of gas baths is considered, the oxygen bath merits preference if merely because the superanantant oxygen is better for respiration.—*Medizinische Klinik*, No. 7, 1910.

ELECTROTHERAPY.

The Vibrator for Uterine Inertia.—A German writer has found vibration an effectual means of restoring tone to the womb during a prolonged labor. By means of a small instrument he has in a number of cases been able to produce at first weak contractions, followed by slightly strong ones, which have rapidly increased in power and efficiency, until effectual contractions were induced and sustained, and labor was terminated without the use of the forceps. This may prove to be, in some cases, a valuable suggestion, as it is often desirable that internal medicines should not be given for this condition.—*Ellingwood's Therapeutist*.

The Treatment of Rheumatic and Rheumatoid Arthritis by Radiant Heat and Cataphoresis.—Baille believes that considerable success is obtainable from the application of radiant heat, as near as possible like sunlight, giving a spectrum from the ultra red to the ultra

violet. "I am quite convinced," he adds, "that an absence of the violet and ultra rays in the ordinary apparatus is largely responsible for the weakness of sedative effects and slow relief of pain, whereas absence of yellow green rays may be responsible for only slight stimulation of metabolism." After 20 minutes' exposure to radiant heat he employs cataphoresis, using only a 2 per cent solution of a salt, such as lithium iodide or sodium salicylate.—*British Medical Journal*.

Vibration in Lumbago.—In treating lumbago with vibration a point to be borne in mind is that inhibition or numbing of the nerves is the object in view. Therefore, a long percussion stroke should be used with deep pressure to the dorsal and lumbar centers in the spine, holding the applicator on each until complete inhibition results which may require anywhere from one or two up to five minutes. Follow this with a thorough vibro-massage of the lumbar muscles, using the brush or soft rubber applicator and preferably the rotary or lateral strokes; this should be kept up long enough to secure a sedative effect.—*The Medical Brief* (May, 1910).

The Cataphoretic Treatment of Sciatica.—Wullyamos says that at the beginning of the treatment the patient takes a hot bath of half an hour's duration in order to rid the pores of any fatty matter they may contain, as this offers a strong resistance to the passage of the ions. The electrodes are large plates of lead, trapezoidal in shape, covered with absorbent material. The cathode is charged with a solution of sodium salicylate to 3 per cent as hot as possible—about 120° F.—the speed and number of ions being proportional to temperature. The patient lies upon the cathode, and the anode is applied to the abdomen, thigh, and leg. The duration of the treatment is from sixty to ninety minutes, and at the beginning of treatment they take place every two or three days. The intensity of the current generally reaches 200 milliamperes. If a patient feels a burn, a layer of caoutchouc is placed between the skin and the electrode at that point. The number of treatments varies between one and fifteen. Remarkable results are said to have been obtained by the treatment and some cures have been effected after the patients had taken long but ineffectual courses of thermal baths.—*British Medical Journal*.

Vibration in Constipation.—In vibrating the abdomen in constipation, one point should be kept carefully in mind, that is, not to dwell for more than two or three seconds over each area. The object of vibration in this instance is to stimulate peristalsis and a very short application is necessary to produce stimulation. The physician using vibration for the first time is apt to be over-enthusiastic, and in his eagerness to do the work thoroughly he usually over-does it, and retards peristalsis and thus defeats his purpose. To get a sufficient amount of stimulation without producing over-stimulation (inhibition) the applicator should be kept moving in small circles, or spirals, along the line of the colon, from cecum to rectum, and then back to the starting point. This should be repeated five, six, eight or more times, according to the requirements of the individual case.—*Therapeutic Medicine*.

RADIOTHERAPY.

Radium in X-Ray Burns.—What may turn out to be a very valuable discovery was announced by Dr. Mackenzie Davidson at the last meeting of the Röntgen Society. He stated that the application of a 29 mg. glass tube of radium for ten minutes upon patches of X-ray dermatitis on his own hands had been followed by a remarkable clearing up of the lesions. When the reaction subsided, after a few days, the part was soft and pliable and not cicatricial, as it should have been under the cautery. The treatment produced a certain amount of mild discomfort only. As to whether radium would be of any service in the deeper lesions, he expressed no opinion. His experience was that its real province lay in superficial conditions of the epidermis. He had found radium also of great value in eye diseases, particularly "spring catarrh." Its value in X-ray dermatitis was beyond all doubt. A man was brought to the meeting—an X-ray operator whom he had treated with radium for extensive lesions upon the hands, the result of working with X-rays. With radium a remarkable improvement was achieved. Dr. Davidson thought that the superficiality of the results obtained pointed to the beta and not to the gamma rays as being the active agent. He used the radium through glass, which stopped all the alpha rays, but allowed all the gamma rays and almost all the beta rays to pass.—*London Correspondence N. Y. Med. Jour.*, May 7, 1910.

X-Rays in Skin Affections.—The X-rays are of particular value in the subacute and chronic forms of eczema. In the subacute vesicular variety mild applications are sufficient, but in squamous and pustular eczema more vigorous treatment is required. The rays are also beneficial in seborrhœic eczema of the face, the duration and frequency of the applications being governed by the nature of the individual case. In verrucose forms of eczema persistent treatment is necessary in order to secure definite results. Eczematous conditions of the lips, ears, axillæ and anal region are especially adapted for X-ray treatment, which is more effective in relieving itching than any available drug locally used. Care must always be taken to avoid adding X-ray dermatitis to the inflammatory condition already present. Acne rosacea of chronic type with involvement of the dermis yields to fairly strong applications of the rays. Psoriasis is hardly to be specified as curable by this method, yet patches situated on the face and hands frequently disappear when it is employed. In cases which resist the ordinary therapeutic measures, or in which the use of chrysarobin or pyrogallol induces an erythematous condition of the lesions, the X-ray should always be tried.—Müller in *Deutsche Med. Zeitung*, January 1, 1910.

The X-Ray in Rodent Ulcer.—Rodent ulcers readily respond to X-ray treatment. They quickly scab over, the scabs drop off, and the ulcer heals up. If the applications are continued at somewhat long intervals for a considerable time after the growth has apparently been cured the result is permanent, but if treatment is stopped as soon as healing appears to have taken place there is sometimes a recurrence. For some reason or other it appears to be very difficult to get the ulcer to heal up a second time with the X-rays. In such cases, if the ulcer is small, healing may be promoted more readily by the application of radium—Metcalf in *British Medical Journal*.

The Treatment of Bone and Joint Tuberculosis With X-Rays.—Brilliant results are reported by the author by the employment of this hitherto rarely used method of treatment. He reports 40 cases of bone and joint tuberculosis, many of them in cases in poor condition and presenting other tuberculosis foci. All the patients were ambulant ones and received no other treatment. In his study extending over two years, Iselin found only four recurrences. The deep-seated joints were not treated because of the doubt concerning the depth to which X-rays penetrate. Children were also not treated because of the injurious effect X-rays have on epiphyseal growth. Aluminum plates were placed over the part treated in order to exclude all but the penetrating rays. The author gives the details which are essential if one would obtain good results with this method.—Iselin in *Deutsche Zeitschrift für Chirurgie*, January, 1910.

X-Ray and High Frequency in Acne.—The X-ray has proved unusually successful in acne, curing many cases resisting ordinary measures. A few points should be kept in mind in treating this disease.

Short treatments are preferable not only on account of the danger of producing burns, but because long applications finally change the epithelial elements into connective tissue and the contraction of this leaves fine wrinkles over the face, which are essentially as bad as the acne.

Treatments of say five to seven minutes' duration will produce results without taking any serious chances. If a longer time is required to cure, the patients are amply repaid by feeling that they are not running any risk.

Deep lancing of pustules, usually considered necessary, is objectionable, because of the fine scars resulting. The high frequency spark from the vacuum tube is almost as effective as the X-ray in acne, and five minutes X-ray followed by three or four minutes high frequency makes an excellent combination treatment.

For the pustules that are forming, a sharp spark for ten to thirty seconds from the high frequency tube will usually abort them. Do not forget that the use of electricity does not prevent you from employing other treatment at the same time.—Eberhart in *The Medical Brief*, May, 1910.

VACCINE AND SERUM THERAPY.

Fifty Cases Treated by Bacterial Vaccines.—J. W. Fisher, of Middletown, Conn., reports a series of cases which included 18 different conditions and 7 different types of bacteria. Of the 50 patients, 34 recovered much more rapidly than would be expected under usual treatment. The cases included an appendical abscess; a suppurating sinus of the leg; metritis, endometritis and pyosalpinx; hay fever; bronchial asthma; abscess of the gall-bladder; pyelonephritis; infection of the hand; 6 cases of pneumonia; 3 cases of coryza; 4 cases of acne.—*Yale Medical Journal*, April, 1910.

The Therapeutic Use of Bacterial Vaccines.—Hoobler reaches the following conclusions:

1. Bacterial vaccines, if properly used, can do the patient no harm.

2. Autogenous vaccines should be used when possible. Stock vaccines are uncertain, but they may be used when there is delay in securing autogenous vaccines.

3. The technic of preparing vaccines is simple and should be made a part of the routine laboratory work in every well equipped hospital.

4. Chronic infections yield more readily to the use of vaccines than acute fulminating infections; and local processes are more easily controlled than general infection.

5. If a vaccine is to be of service, it will usually show results within one week or ten days.—*American Journal of the Medical Sciences*, January, 1910.

The Serum Treatment of Articular Rheumatism.—Ratzeburg reports excellent results with Menzer's streptococcus serum in a case of recurrent rheumatic polyarthritis. In the fourteen years previous to 1907 the patient, a man of fifty-four, had had eight attacks, all the joints of all four extremities being involved at one time or another. The last attack was the worst and resisted every form of treatment until, as a last resort, injections of Menzer's serum were begun. Six injections were given two days apart, 32 ccm. in all. Seven weeks after the first injection the patient was able to leave his bed. This is now more than two years ago and there has not been the slightest sign of recurrence. The writer does not advocate the use of the serum until the salicylates and other remedies such as hot-air baths and massage have been given a good trial. Contra-indications are marked mitral stenosis, extreme arteriosclerosis and asthenic conditions in general.—*Therapie der Gegenwart*, March, 1910.

Vaccines in Otitis Media.—A. C. Christie, U. S. A., reports on the use of autogenous vaccines in the treatment of acute, subacute and chronic otitis media. He had eighteen cases all told among the white troops of the United States forces stationed in the Philippine Islands. In all but two of these cases the success of the treatment was complete. In the two cases that were benefited but not completely cured, there was bone necrosis which would have demanded operative measures. In most of the cases treated, the local treatment was stopped when the vaccines were started, in order that the two methods might be compared. To avoid the reactions reported in some of the cases the vaccines are now made to contain 250 million organisms to the cubic centimeter, and for the first dose only 0.5 c.c. is injected. If there is no reaction with this, the dose is repeated in five days, but if there is reaction, the second dose is deferred for a week. When 0.5 c.c. can be given without reaction, the dose is increased to 1 c.c., and this is continued at weekly intervals until a cure is accomplished. No opsonic counts were made in these cases, and Christie believes the clinical symptoms are sufficient to base the dosage on if the initial dose is small and the rate of increase very gradual. The vaccines in these cases were prepared by inoculating agar tubes with a platinum wire from the discharge as it issued from the perforation in the drum, or, if this could not be seen, then as close to the drum as possible. If more than one organism was found, the culture was plated and vaccines made from the culture of the separate organisms recovered; these were then diluted to contain a certain number of germs to the cubic centimeter, and then mixed

in equal proportions. Better results are obtained by this method than by making the vaccines directly from a culture which is a mixture of two or more organisms, as is sometimes done. When the germs are grown together, one may develop more rapidly than the others, so that the vaccine does not represent all of the causative organisms. The time that it takes for plating is not an objection to the method, for it is found that in the acute cases only one kind of organism is present in the majority of instances, and that plating is necessary only in the chronic cases. Christie reaches the conclusion that bacterial inoculation is a powerful agent for the cure of these cases.—*Lancet Clinic*, No. 18, 1910.

DIETETICS.

Sawdust in Chronic Constipation.—Blüncel and Ulrici recommend a wheaten bread, to which is added 10 per cent of finely-sifted beechwood sawdust. The bread does not differ in taste or appearance from ordinary bread, and the added cellulose, which is not digested, increases the solid residue in the intestine, and thus assists the peristaltic movements. Good results were obtained in eighty cases.—*Bull. gén. de Thérap.*, November 15, 1909.

Buttermilk for Infants.—Dr. F. H. Allen writes: "However irrational as an infant's food buttermilk may be theoretically, in practice it produces good results, especially in cases of intestinal indigestion of the non-infectious type. Its use in the infectious form seems also to be indicated, though it should be given early and faithfully if we would know its possibilities."—*Annals of Gynecology and Pediatrics*.

Milk, Sweet and Sour.—C. H. Cattle contrasts the various views as to whether man is morphologically a carnivorous or a herbivorous animal, and sums up chiefly in favor of a lacto-vegetarian diet. Over-civilization leads to either overfeeding and ignorant feeding, or else underfeeding and ignorant feeding, the rich overfeeding and the poor being underfed. Man is too carnivorous, and many diseases, such as gout and arteriosclerosis, are due to indulgence in food containing purin bases.

The poor man's diet consists chiefly of bread and butter, tea, cheese, potatoes, and a very little meat. He seldom took milk, a form of food which medical men should prescribe more often than was the case. It contained practically no uric acid bases, and cheese with bread and milk was an almost perfect diet.

On account of the putrefactive agents in the colon being more active in an alkaline medium, it is a distinct advantage to "sour" milk, and so ensure that it reaches the colon in an acid form. Souring is best brought about by adding the Bulgarian bacillus to boiled milk and allowing it to incubate. The author is now treating all his typhoid patients by this method, and with gratifying results. He especially recommends it in cases of ulcerative colitis.—*British Med. Journal*.

The Soy Bean as a Food in Diabetes.—Drs. Julius Friedenwald and John Ruhräh, Baltimore, at the 112th annual meeting of the Medical and Chirurgical Faculty of Maryland, said that the soy bean (*Glycine*

hispida), sometimes incorrectly called the soja bean, is an annual leguminous plant which originally grew in a wild state from Cochin China to the south of Japan and to Java. The soy bean has been known in the United States for many years, but until the last 15 or 20 years, only as a curiosity. (A full account of the plant will be found in Farmers' Bulletin No. 58 of the U. S. Dept. Agriculture, and of the different varieties in the Bureau of Plant Industry Bulletin No. 98.) The bean has been put to many uses. The yellow variety, grown in America, has the following composition: Water, 10.13 per cent; protein, 34.63 per cent; fat, 17.98 per cent; nitrogen free extract, 30.50 per cent; fiber, 3.69 per cent; ash, 3.07 per cent. The most striking thing about the bean is the fact that it contains no starch, or, at least, a very small quantity, which is strange when one considers that it resembles the various beans very closely and that all other varieties of beans are extremely rich in starchy materials. The fact that the soy bean contains little or no starch suggests its use in certain diseases. One of us (Ruhräh) has already called attention to the use of the bean in infant feeding. It may be prepared in the form of gruel flour, gruels, broths, muffins, etc. In the eight cases of diabetes which we report the patients were placed first, on an unlimited diet; second, on the usual diabetic diet; third, on the usual diabetic diet together with the soy bean, the latter replacing largely the gluten or wheat bread. We conclude: 1. The soy bean is a valuable addition to the dietary of the diabetic on account of its palatability and the numerous ways in which it can be prepared. 2. The soy bean in some ways causes a reduction in percentage and total quantity of sugar passed in diabetic subjects on the usual dietary restrictions.—*Journal A. M. A.*

The Administration of Fats in Gastric Disease.—Since the investigations of Pawlow, the role of fats in gastric disorders has excited a good deal of attention among general practitioners and also among a number of their dyspeptic patients, on account of the prescription of that which had been popularly held to be injurious. But the fact that the gastric secretion is hindered by fat naturally led to its use when that secretion seemed to require checking. The subject was recently brought before the Royal Society of Medicine by Drs. Craven, Moore, and R. L. Ferguson, who had tried the effect of giving olive or almond oil and found that either diminished the digestive power of the gastric juice, both as regards the degree of acidity and its peptic activity. They gave about one ounce of oil before a test breakfast in some sixty cases. The effect was fairly constant, but there were some variations, according to the condition of the digestion in the different cases. The acid regurgitation and tendency to spasm in pyloric or duodenal ulcer seemed to be relieved by the oil and was perhaps opposed to the view that these symptoms were due to regurgitation of the contents of the duodenum.

In the discussion Dr. Hertz reported that for two years he had been treating ulcer of the stomach and duodenum for a day or two with an exclusively oil diet, which he found quite removed the pain. In cases of hemorrhage it was better than rectal feeding, which is always accompanied by gastric secretion. In no case had he met with intolerance of the diet, which he continued after the few days to such

an extent as to give a dose of oil before every meal. Recurrence of symptoms was thus avoided. Dr. Saundby thought that the administration of oil relieved hyperacidity. He gave it as an emulsion. Dr. R. Hutchison thought less unpleasant treatment sufficient for hyperchlorhydria, and that rest in bed would be enough to relieve the pain of ulcer. The effect of oil on the pancreatic secretion had yet to be investigated. He took a rather reserved view of the matter.

Fasting in the Treatment of Chronic Disease.—In chronic diseases nutrition is abnormal, waste is not promptly and properly eliminated. It accumulates, the system does not reduce its products to their lowest terms, causing friction and making the work of elimination harder. It is a great mistake to further add to the difficulty by giving more and more food to patients in whom the process of nutrition stagnates. Food will not be transformed into nourishing red blood unless the system needs it and has appetite for it. To eat food under such conditions means simply to obstruct the circulation with an improperly digested non-vital pabulum which increases the torpor and burden of the system, depressing the recuperative impulse.

Fasting rests the heart, making its work easier, rests the stomach and bowels, enabling them to store up secretory and peristaltic power, lowers blood-pressure, flushing the area of elimination, increases the consumption of water, softens and relaxes the entire body, so that the work of cleaning up can proceed with greater rapidity and the least expenditure of vital force.

Fasting may be absolute for one day or for several days. It may be partial by abstaining from one meal or two meals, or by using a very light diet. We should always avoid extremes and hobbies. Make successful experience the sole judge of the value of our methods and be prepared to discard them for others if unfavorable symptoms develop in any particular case.—Geo. F. Butler, in *Medical Summary*.

The Management of Glycosuria in Elderly Persons.—In a paper with the above title Dr. Victor C. Vaughan of Ann Arbor (*N. Y. Med. Jour.*, February 26, 1910) concludes that the glycosuria of elderly life is due, in many instances at least, to excessive carbohydrate feeding; this excess is usually confined to some special carbohydrates, sugar and wheat starch; the early glycosuric of this class is often easily able to care for other carbohydrate foods; the harmful carbohydrates should be detected and eliminated from the food; those that can be assimilated should be determined and permitted; there is a specificity in the metabolism of carbohydrates, as there is in that of proteins; the presence of a small amount (0.5 to 2 per cent) of sugar in the urine should not be regarded as a matter of trivial importance.

In many persons the capacity of assimilating carbohydrates is largely determined by the time of day when the food is taken. Glycosurics who cannot metabolize carbohydrates when taken for breakfast may dispose of one hundred grammes of bread taken at a six o'clock dinner. Why this is true it is hard to say, unless it is due to the more hurried way in which many things, both foods and medicines, pass through the body when taken in the morning. To what extent this holds is not known, but it has been observed in many patients.

Another point is the value of the open air treatment of this form of glycosuria. In a general way it is stated by most authorities on diabetes that life in the open air is beneficial, but this has not been sufficiently emphasized. Vaughan believes that porch sleeping is quite as beneficial to the glycosuric as to the tuberculous.

MISCELLANEOUS.

Olive Oil in Constipation.—In many cases of simple constipation the injection of a drachm or two of olive oil into the rectum at bed time will produce a satisfactory evacuation the following morning.—Sibley in *Therapeutic Medicine*.

Effect of Blue Color Upon Flies.—Marre and Fe observed that cow stables, the walls of which had been painted blue, were evidently avoided by the common house fly. It is therefore recommended, in order to keep the flies away from the stables, to paint the walls once or twice yearly with chlorinated lime solution to which some ultramarine blue has been added—10 lbs. of lime and 500grs. ultramarine blue in 100 litres of water.—*Centralb. für Agric. Chemie*.

Pelvic Massage.—Pelvic massage is a method of treatment which of late has received a great deal of attention. Except in properly selected cases this method of treatment may be a very dangerous one. In pus tubes or in ectopic gestation it would prove invaluable to the business prosperity of the undertaker. In a simple subinvolved uterus or a pelvic congestion it might prove of use, but a most careful examination should always be made to eliminate the presence of any gross lesion in the pelvis before resorting to it. It is a method which is much better carried out by a nurse trained in its use than by the physician. I have never resorted to it, but I can imagine the repugnance which a refined, gentle woman must have for it when carried out by a man. J. A. McGlinn in *New York Medical Journal* (March 12, 1910).

Convincing Light Therapy.—One of the most convincing instances of the real efficacy of light therapy which ever came under our notice was that of a case of nervous hysterical shock in a woman. The patient, who had recently become a mother, had lost her infant almost as soon as it was born, and was in a pitiful state of uncontrollable grief almost amounting to mania, which lasted several hours. All other measures failing, the attendant physician, himself a skeptic in such matters, as a last resort called for a therapeutic lamp. Without any co-operation on the part of the patient, or even her acquiescence—she was too wild to take any mental part in the proceeding at all—so that the psychic element can be ruled entirely out, the blue rays were allowed to play upon her. Nothing else was said or done. Within ten minutes the woman was quietly sleeping; she awoke some hours later, calm and resigned, and did not suffer any recurrence of the nervous storm that had previously threatened her reason. Such instances—for the truth of which the writer vouches—ought to silence all disputes concerning the therapeutic value of solar rays, and to discount all foolish talk about their “sheerly psychic” virtue.—*The Medical Brief* (May, 1910).

Hyperemia in Malignant Furuncle of the Face.—Malignant furuncle of the face, particularly of the upper lip, is usually treated by means of incision or excision; more rarely by the use of caustics. Owing to the great danger of thrombosis of the cerebral veins, many authors recommend expectant treatment. Keppler has seen excellent results from hyperemia, induced by applying a bandage low down around the neck. The eyelids and the lips will swell up, but in one to three days of the boardy infiltration has disappeared and the furuncle will begin to discharge pus, which rapidly changes to clear serum. The bandage is applied as soon as possible and left on for twenty to twenty-two hours during the day. The patients usually experience a pronounced relief from pain very early in the treatment. Incisions are rarely necessary, unless secondary pustules have formed. All cases treated in this way were cured, while with the old method of incision a large percentage died of meningitis or sepsis.—*Münch. Med. Wochenschrift*, 1910, Nos. 7 to 8.

Treatment of Diabetic Gangrene With Hot Air.—Richard presented to the *Societe de Chirurgie* five cases of diabetic gangrene, in which the application of hot air had given interesting results. The first case was a man of 46 passing 127 grams of sugar and $4\frac{1}{2}$ grams of albumen a day. There was distinct gangrene of the first and second toes of the left foot. The patient was treated with hot air. The result was very remarkable: both toes were saved; the tissues were supple and vitalized. The second case was a man of 66 passing 166 grams of sugar and $2\frac{1}{2}$ grams of albumen daily. One gangrenous had been amputated. When the gangrene recurred, hot air was used, and with good result. Equally good results were obtained in three other cases treated by MM. Vignat and Muller.

When we reflect that the results of surgical intervention in diabetic gangrene are often deceptive, we cannot fail to appreciate the good effects of the application of hot air in these cases.

The method consists in the employment of an electrical resistance apparatus, capable of heating air from sixty degrees to seven hundred degrees. At the first application, superheated air is used (from 600 to 700 degrees C.), which sterilizes the tissues by calcining, or carbonizing them. At the second application a series of hot air douches is employed (at sixty degrees C.), which epidermize the tissue and secure perfect cicatrization.—From the *Gazette des Hopitaux* in New Orleans M. & S. Journal (May, 1910).

Abdominal Massage in Treatment of Whooping Cough.—Hönck tells of having called attention three years ago to the catarrh which develops in the upper air passages from disturbances in the circulation on account of irritation of the sympathetic nerves during appendicitis. The tracheobronchial glands may be stimulated to increased secretion and the mucosa may swell preventing expulsion of the mucus. If infection occurs, catarrh is installed. This connection between the abdomen and the tracheobronchial mucosa explains the benefit of abdominal massage in treatment of such conditions, and he has found it almost a specific in many cases of whooping cough free from febrile complications; mild fever is in itself no contraindication. He relates the details of seven cases to show the benefit derived from cautious massage especially of the back on both sides of the spine. In one case of pneumococcus infection

with cough, night sweats, cold feet, bad appetite and emaciation, conditions improved at once and with five sittings the patient was practically cured. In a case of pertussis in a woman of 35 all symptoms subsided except a slight cough under massage daily in four days. Cough from a tickling sensation in the throat, he says, is also controlled by this method of treatment.—*Fortschritte der Medizin* (Feb. 17, 1910).

Sterilization by Light.—Milk is now being sterilized in Paris by submitting it to the action of ultra-violet rays, thus avoiding the use of heat or treatment by chemical antiseptic substances. It has long been known that light without heat can destroy micro-organisms, and in 1893 it was proved that from the ultra-violet part of the spectrum there proceeded rays that had a bactericidal effect. It was further shown that glass stopped these rays, which, however, passed easily through quartz. It has taken over seven years to turn this knowledge to general use; but now in Paris an apparatus has been made by which ultra-violet rays, through quartz, sterilize 132 gallons of water per hour. After much trouble the sterilizing of milk has been successfully accomplished, although its opaqueness was at first a difficulty.—*The Medical Times* (London).

Operations with the Electric Spark and Diathermia.—Vincenz Czerny has investigated the effect of fulguration, high-frequency currents, and Nagelschmidt's diathermia upon carcinomata in various locations. From these experiments and observations the author concludes that in these therapeutic procedures we have means of destroying local cancers, but, at least in cases previously operated upon, they do not prevent recurrence any more certainly than any other previously used methods. However, we are rarely able to use the method in the early stage of cancer, when it might be of some value in treatment if the patient would consent to the bloodless destruction of the tissue as readily as to the bloody operations. He considers it important that the methods be given further trial in order to prove, as may be the case, that by electrical treatment the deep lying cancer germ may be so debilitated by the currents that the natural curative power of the body, helped possibly by artificial aids, may destroy it and thus bring about a cure. Further experience will teach the true value of the various methods and show us how far we should go with them in order to obtain the best results. The experience which the author has had with fulguration leads him to offer the warning that only such physicians should make use of diathermia, the electrocaustic, and the spark as have operative experience, technical skill, and physical knowledge of the high-frequency currents, or else can command a technician or physicist to be on hand with advice and help. These very energetic currents may easily do great damage.—*Deut. Med. Wochenschr.* (March 17, 1910).

Carbon-Dioxide Snow in Dermatology.—Dr. Strauss claims that carbondioxide snow is obtained by fastening the neck of a buckskin bag over the discharging cock of a filled carbonic acid tank and opening the cock. The snow that forms in the bag can be shaped with the hands into discs and placed with a glass spatula over the skin area to be treated and gently pressed. As soon as the snow adheres to the skin it appears as a frozen mass and the patient feels a sense of cold.

If the snow is pressed on too hard, freezing of the tissues to the depth

of from 3 to 5 millimeters may occur. When the snow has melted, a pricking sensation is felt, but this will disappear in a short time. After that, redness of the skin and raised wheals will occur. If the application of the snow continues ten seconds, a crust is formed; if it lasts thirty seconds, a blister results without any cicatrix following it; after thirty up to sixty seconds a blister forms, with subsequent cicatrix.

It is best to let the snow act for from ten to thirty seconds as in this way no cicatrix ensues. The next application should be made when the reaction after the preceding application has ceased, while during the interval the spot should be covered with a zinc paste.

Cures were effected with this treatment in pigmented and vascular moles, in warts (after ten to twenty minutes), in keratous formations, and in the flat dermic cancer of the aged. But no good results were observed from its use in spotted and corroding herpes.—*Pharmazeutische Centralhalle* (1909, p. 572).

The Physiotherapy of Sciatica.—Orb favors the application of dry cupping glasses which the patients themselves can use, so that the application may be frequently repeated. He has seen good results in acute cases from wet packs on the hip and leg made with linen or silk bandages, wrung out in water of 60 to 70 degrees and covered with a double layer of flannel. Orb does not employ massage in the acute cases as the hard pressure often employed by masseurs may considerably increase the pains. But very light friction carefully applied by the physician himself, avoiding the most painful spots, is sometimes very useful.

Electrotherapy he does not use very often; when he uses it he gives the galvanic current in acute and chronic cases, using two electrodes, each 10 square inches in area, the negative on the abdomen, the positive on the posterior iliac spine or the sciatic notch, moving both evenly along the leg without interruption of the current.

While the application of physical methods of treatment is limited in the acutest cases of sciatica, it has ample scope, he says, in the sub-acute and chronic cases. In these cases massage is used most frequently. It is necessary to employ very light massage at the beginning of a course of treatment in order to avoid unnecessary and undesirable pains—M. Orb in *Medical Press and Circular* (London, March 30, 1910).

Therapeutic Utilization of Biliary Fistulas.—L. L. McArthur, Chicago (*Journal A. M. A.*), having noticed the loss of water in irrigating biliary fistulas, conceived the idea of studying the effects of various fluids introduced through this route into the duodenum. First, as a means of deluging the system with water, he found that a temporary fistula may often be utilized with surprisingly good effects. He has repeatedly injected in such cases, by continuous irrigation of a warm salt solution up to 3,000 c.c. of fluid as a means of flushing out the kidneys, clearing up a jaundice or filling up the blood vessels, and in one case even, added dextrose as supplying the food calories most readily assimilable. He is not recommending a cholecystostomy as a therapeutic measure for other ailments than those for which it was originally designed, but simply the utilization of already existing fistulas for indications similar to those mentioned.

REPRINTED ARTICLES

GALVANISM IN DISEASES OF THE LARYNX.

BY E. GARSON ABBOTT, M. D., OMAHA, NEB.

I wish to call attention to a method of treating some conditions of the larynx more satisfactorily than can be done in any other manner. All cases in which there is lack of nutrition of the laryngeal apparatus are not proper subjects for this treatment. I have treated cases ranging from a slight muscular weakness of the larynx to a complete aphonia due to chronic catarrhal invasion. The method of application is simple, and the requisites are a good galvanic battery of at least twenty cells; a reliable milliamperemeter, a nerve electrode of medium size, an interrupting handle, and a flexible electrode about the size of the hand.

The flat electrode, attached to the positive pole, should, after being well moistened, be placed at the back of the neck. The nerve electrode, well secured into the interrupting handle, is covered with a piece of absorbent cotton also well moistened, attached to the negative pole. To place the negative electrode properly it is necessary to understand the anatomy of the larynx, as to the course of the inferior, or recurrent laryngeal nerve, which is the motor nerve of the muscles to be stimulated. This nerve ascends on either side, in the groove between the trachea and esophagus, and passing under the lower border of the inferior constrictor muscles, enters the larynx behind the articulation of the inferior cornu of the thyroid cartilage with the cricoid cartilage, at which point it can be easily reached by carefully pressing the electrode around the larynx with the one hand, while the other hand supports it upon the other side.

Enough current is used to give good contractions, usually from ten to fifteen milliamperes. The electrodes being in proper position, press the interrupter in the handle for an instant and then release it; repeat at intervals of ten or twenty seconds about twelve times. This will be sufficient for one seance. Treatments may be given every other day with advantage, but each case must be carefully watched as it progresses, and it is better in any case to underdo than to overdo.

To illustrate, I will quote a few cases:

Case 1.—Miss H., professional singer, presented herself for relief of a trouble which prevented her from being able to prolong the higher notes to their length. I applied the treatment described above, and was much gratified to find a marked improvement at the first sitting. A few treatments entirely cured the trouble.

Case 2.—Miss G. had been coming to my office for some time for treatment of a chronic catarrhal laryngitis, which had developed into a hoarseness at all times, and upon any exposure to dampness or evening air a complete aphonia would be the result. So far, the ordinary treatments had been of but slight value, and I resolved to try the effect of electricity, although I did not expect very much from it in her case. The first treatment improved her, and although she could not present herself for treatment more than once a week, yet a dozen treatments at that interval prevented the aphonia at any time, and improved the voice altogether.

The aim in these cases is, of course, to promote nutrition, and this method is perhaps the best that can be devised for the purpose.

Besides the muscular development that this treatment produces, we will remember that just above the vocal cords is situated the sacculi laryngis, containing about sixty glands, which normally secrete a substance that is thrown out upon the vocal cords, supposedly for their lubrication. To the restoration of this function is undoubtedly due much of the improvement produced in these cases.—Reprinted *in toto* from *The Clinique* (Feb., 1910).

ABRAMS' METHOD IN THE TREATMENT OF ANEURYSM OF THE THORACIC AORTA.

BY L. ST. JOHN HELY, M. D., MADERA, CAL.

Dr. Albert Abrams, of San Francisco, first directed attention* to a novel method of treating this intractable affection, which he has since elaborated in his recent book.** He reports fourteen cases of aneurysm of the thoracic and abdominal aorta which he has apparently cured, although he qualifies his results by stating that he has not the hardihood to regard his method as curative, for time alone is the decisive factor. A conservative estimate of the results, however, prompt him to say that, as a palliative method, it surpasses any in simplicity and rapidity of action which has yet been introduced to the profession.

Abrams claims that the subsidiary center of the vasoconstrictor nerves of the aorta is located in the spinal cord in proximity to the spinous process of the seventh cervical vertebra and that by stimulation of the center in question by concussion, the normal as well as the abnormal aorta may be brought to contraction. Ample evidence is furnished of the latter fact in his work on spondylotherapy. The method, in brief, which he suggests in the treatment of aortic aneurysm, consists in concussion of the spinous process of the seventh cervical vertebra. He deprecates the employment of the conventional vibrating apparatus. The vibratory apparatus which the physician must employ is one giving the percussion stroke. All other motions, such as oscillations, shaking, and friction interfere with results. In the absence of a suitable apparatus, a pleximeter (a strip of linoleum or thick rubber) and a hammer, to the end of which is fixed a piece of hard rubber, are employed. The pleximeter is applied to the seventh cervical spine and is struck a series of rapid and moderate blows by the hammer. The daily seances, according to results, may last from five to fifteen minutes, but during the seance the treatment must be interrupted from time to time to avoid irritation of the skin.

The results of Abrams' method are usually immediate, great relief following a few seances. When the writer first encountered the monograph of the latter on the subject, he was rather skeptical, although Abrams anticipates such criticism in his book by observing that any merit attached to his method may be obscured by its simplicity.

The writer presents the following history of a patient suffering from aneurysm of the thoracic aorta who was treated by the "concussion-method" of Abrams:

J. A., aged 46; weight, 185 pounds; a blacksmith and a moderate drinker, had no previous history of illness beyond the diseases of child-

*Medical Record, July 3, 1909.

**Spondylotherapy, 1910. Philopolis Press, San Francisco.

hood. On the sixth of November, 1909, the patient first noticed a small projection in the region of the first rib about the size of a dime. A peculiar burning sensation corresponding to the latter point was likewise noted, but the patient gave it no serious consideration until December 19 of that year, when while assisting in lifting a wagon he experienced a choking feeling and the miniature projection attained an enormous size. The patient then sought medical counsel and the diagnosis of a thoracic aneurysm was definitely established. At this time the following subjective and objective symptoms were noted:

Pronounced cyanosis which was universal, cardiac palpitation, choking, and dyspnea upon the slightest exertion, and an almost incessant cough. At night the patient could find a modicum of relief only in one position, viz., propped at an angle of 45° on the right side, and even then the coughing and choking would awaken him every hour. I regarded his condition as absolutely hopeless and so informed his friends. Having at this time read the method of Abrams, I employed it first on January 21, 1910. Concussion treatment of the seventh cervical vertebral spine was executed daily for fifteen minutes from the latter date until March 5, 1910, when treatment was discontinued.

The second night following the concussion the patient rested well, and after the fourth treatment there was an absolute evanescence of all symptoms. In the language of the patient, "I can now sleep in any position and like a baby; in fact, as natural as any one. I do not cough nor suffocate any more, and, aside from the tumor on the chest, I would not know that there was anything at all the matter with me."

The aneurysmal tumor when first examined projected considerably and measured about 2½ inches in diameter at the base. At the end of the first week's treatment the tumor was reduced about 25 per cent, but there was no apparent further diminution in size when treatment was discontinued. It was impossible for me to continue treatment, as the patient insisted that he was well and further treatment was unnecessary. The results in this case were, however, immediate and corresponded in the main with the results obtained in the cases reported by Dr. Abrams.—Reprinted *in toto* from *The Medical Record* (May 21, 1910).

BIER'S HYPEREMIA APPLIED TO SUPPURATIVE PROCESSES IN DISPENSARY WORK.

BY S. W. MOORHEAD, M. D.

Surgeon to the Out-patient Dept. of the Howard Hospital, Philadelphia.

That suppurative processes are profoundly influenced by changes in the blood supply as brought about by Bier's method of inducing hyperemia is now firmly established. The amount of benefit derived from the treatment varies greatly with the method of application, nature of the wound, and idiosyncrasies of the patient, for there are idiosyncrasies to induce congestion, even as to certain drugs. Fortunately the great majority of suppurative conditions are benefited in various degrees, and the cases in which no benefit is observed are rare.

As means of increasing the blood supply to a part, thus increasing the hyperemia brought about by inflammation, Bier makes use of constricting bands, suction cups, and hot air. The first two of these are used in combating pyogenic infection. They are applied usually for periods

of five minutes, with intervals of three minutes between each application. The number of applications usually made is six. In the case of bands much longer applications are often desirable, as much as twenty or twenty-two hours out of the twenty-four, the bandages remaining in place for periods of ten or eleven hours. As it is impossible to be sure that the bandages will remain in proper condition in patients who are not under constant observation, as in dispensary work, I have had little experience with this method.

As emphasized by Bier, the greatest gentleness is of prime importance in the application of the treatment. If the application of a constricting band or cup is painful, it is being wrongly applied, and must be loosened, its position altered, or the type of cup changed. Most frequently when the patient complains of pain it will be found that more than the requisite energy has been expended in the application; that the band is so tight that the return circulation is entirely cut off; or that the skin and the subcutaneous tissues have been drawn too far into the cup. Occasionally it will be found that the cup used is too small, and that the whole of the inflamed area is not being subjected to the hyperemic treatment, so that at one or more points the inflammatory tissue is being traumatized by the margin of the glass. Personally I have never seen bad results follow the placing of a cup over a portion of an inflamed area, though I have been forced to place a cup in this manner in a small number of cases in which the cellulitis was so extensive that no cup of requisite size and shape was at hand, and obstruction hyperemia was not feasible. In these cases very gentle suction was made, so that no pain was caused by the application, with the result that after one or two treatments the cellulitis, except about the primary focus, had disappeared.

The following case is typical of many:

J. D., white, ten years old, came to the Dispensary suffering from a furuncle of the cheek. The lesion had been present for three days. There was marked induration for an area $1\frac{1}{2}$ inches in diameter, and reddening of the skin with moderate swelling extending backward nearly to the ear and forward to the angle of the mouth. As the skin at the apex of the furuncle was already ulcerated, no incision was made. A circular cup $1\frac{1}{2}$ inches in diameter, well anointed with boric ointment, was applied and gentle suction exerted. About a drachm of blood and serum was withdrawn at the first application. As it was an unusually busy day, the six treatments advised by Bier were reduced to four. The following day the inflammation was limited to the immediate neighborhood of the furuncle. The cup was applied as on the previous day, but only a few drops of seropus were obtained. The treatment was continued for four days, the wound being dressed with boric ointment at the conclusion of each treatment. On the fourth day after the first application of a cup the lesion required no dressing, a cup being applied merely to hasten the disappearance of the induration.

Of all the lesions treated by hyperemia, possibly the most pleasing results are obtained with carbuncles. These troublesome infections can be treated more easily, painlessly, and expeditiously by means of vacuum cups than in any other manner. The following case shows the results obtained in a severe infection:

P. C., white, 39 years of age, an oyster-opener, applied for treatment December 21, 1908. He had a carbuncle over his left scapula

which had at first made its appearance on December 12. The total area involved was seven inches in axial and five inches in transverse diameter. In the center extensive necrosis had already taken place. An incision $2\frac{1}{2}$ inches long was made under nitrous oxide anesthesia, the sloughs being removed and the wound packed with gauze. The patient returned the following day, having had an uncomfortable night, but little better than the one previous. As I had no suction cup of sufficient size a Bier cup was improvised out of a circular solution basin, the air being exhausted by means of an alcohol flame. Cupping in this manner was repeated daily, the discomfort caused being very slight. That there was any pain at all was due to the impossibility of accurately regulating the amount of suction with the crude method employed. The result, however, was very pleasing. The sloughs separated early and were moderate in size. Pain and tenderness were slight. At the end of $2\frac{1}{2}$ weeks healing was so far advanced that the patient received permission to dress the wound at home.

In the treatment of infectious conditions of the hands, such as felons and suppurative tenosynovitis, results are not nearly so prompt owing to the complexity of the tissues involved. It is futile to trust to small, inadequate incisions. Much time is lost in this way, and the disfiguring scars obviated in occasional instances do not compensate for the greater destruction of tissue and the numerous, extensive, and mutilating incisions which have to be made ultimately in a large percentage of cases. In using the Bier hyperemia the evacuation of pus is of as great importance as in any other method of treatment. The bad results sometimes ascribed to the hyperemia are often due to the surgeon's failure to secure adequate drainage. Drainage in the sense of gauze and tubes for the conveyance of pus to the surface is only rarely required, and then for but short periods; but the establishment of an easy mode of egress is imperative.

The application of the treatment in these lesions can be accomplished by either obstruction or suction. Obstruction hyperemia will usually be chosen on account of the simplicity of its application and of the apparatus required. A strip of rubber dam, $2\frac{1}{2}$ inches wide and one or two yards long, makes the most satisfactory bandage. This is wrapped around the arm or forearm sufficiently tight to cause congestion distally, but not tight enough to shut off the arterial circulation or cause pain. Many contend that it is not proper to put the bandage on the forearm, as the veins in the interosseous space are protected from pressure. This is a fallacy, however, being in opposition to the theory of uniform compression of the tissues upon which such blood-pressure instruments as those of Riva Rocci, Stanton, and Erlanger are based.

The duration of the treatment each day varies with circumstances and the benefit derived. In dispensary work the applications are necessarily of short duration, the same intervals as in the application of cups being generally employed. I may say that in one case of extensive tenosynovitis which I treated in the ward obstructive hyperemia for periods of ten hours twice a day gave most satisfactory results. Hyperemia by suction I have been able to use only for infection of the fingers, as apparatus sufficiently large to include the whole hand has not been at my disposal.

In all but two cases the treatment has been beneficial in varying degrees. In the two cases referred to the cellulitis increased after each application. Both were cases of tenosynovitis—one of the middle finger, the other of the thumb. In the latter the radial palmar space was involved. Both patients bled very profusely whenever the bandage was applied or their wounds were subjected to the least trauma.

In the treatment of felons and infected wounds of the fingers I have found obstruction hyperemia to be more comfortable to the patient, and more beneficial as well, when the bandage was placed about the forearm than when about the affected finger. Suction hyperemia has given better results in such cases than has the obstructive type.—Reprinted from *The Therapeutic Gazette* (April 15, 1910).

MASSAGE IN THE TREATMENT OF FRACTURES.

BY KURRE W. OSTROM, PHILEDALPHIA, PA. [] [] []

The ambulatory treatment of fractures has been recommended by Krause, of Germany, and by Hood and Sir William Bennett, of England, and the method is fast spreading in this country in a modified form. It is not the author's desire to advocate the ambulatory treatment in a radical way, but he wishes to explain a happy medium between the old-fashioned immobilization and the modern ambulatory treatment.

We must be able to prove some pronounced advantages for our method, or we have no just claims for converts. By the method to be described we gain the following things:

1. To keep the patient comfortable.
2. We overcome the trying muscular spasm.
3. We finish up with good, movable joints near the seat of the fracture.
4. We gain time.

First of all, let it be well understood that we refer only to simple fractures. It is not inferred that the masseur is to reduce the fracture; he is only to overcome the swelling from the effused blood and lymph, under the surgeon's directions and orders. Men like Billroth and von Bergmann were their own masseurs when it came to reducing fractures.

As soon as possible after a fracture, we begin the massage to relieve the swelling and make it easier for the surgeon to set the bone. For instance, in a case of fracture of the leg, somewhere below the middle, we have the patient resting flat on his back and the assistant holding the foot steady. The operator starts with strokings with the full, curved palm of the hand upwards from *above* the seat of fracture up to the groin. The muscular spasm is now troublesome, and it is decided comfort instead of pain that the patient experiences from our work. Gradually we begin to work also below the seat of fracture, and with the hand well oiled we go over the fracture itself, but with even and well graduated pressure. Now that the swelling is modified and the patient comparatively comfortable, he is ready to have the fracture set. The fracture set described by Sir William Bennett allows the extremity to be secured on a back splint with a foot piece by bandages at the ankle and knee. The side splints are held in position by webbing. The side splints are easily taken off, and we can bathe the limb and apply our massage daily, much to the patient's comfort. The first to be relieved is the intense pain caused by muscular spasm; we use strokings and some frictions with the

fingers close together, even over the fracture itself. After three days we begin our passive movements of the toes to prevent adhesions and neuritis. After the sixth day we may begin passive movements of the ankle.

The massage should be given for twenty minutes, and the passive movements from three to five minutes. It is not long before the patient begins some slight active movements of the ankle with the fracture supported, and after two weeks the knee joint should be flexed and extended. At the end of the third week the fracture is in good shape, and with some kind of support around the tibia the patient can sit up; and in a few days, with the massage and passive movements continued daily, he is soon able to be about.

In fracture of the patella, massage is most useful. A thin back splint is used, well padded at first, and the whole limb is treated daily from the start. We begin with strokings of the inside of the thigh, afterward strokings of the leg and the foot. On the fifth day the passive movements are started. We must try to overcome the contraction of the quadriceps extensor, and from the very beginning must guard against adhesion of the fragments, especially the lower one. This form of fracture affords the best illustration for practical results by massage and passive movements. Most everyone who has treated patella fractures by the old method of the tightest bandages and complete immobilization knows how troublesome it was to get the normal flexion restored, and how the patient was compelled to suffer the most excruciating pain on forced flexion. This is fortunately done away with by our modern methods.—Reprinted from *The Medical World* (April, 1910).

When President Garfield was in college he was striving for honors in Latin. His strongest rival for the honors lived in a room directly across the campus from his own. Garfield said he found out that his rival studied his Latin the last hour before retiring. Garfield adopted the plan of studying his Latin the same hour—in fact he studied until his rival turned out his light each night. **AND THEN HE STUDIED JUST FIFTEEN MINUTES LONGER.** He won the honors. The fifteen minutes extra each night gave him the necessary slight advantage over the other man in the final markings.

BOOK REVIEWS

MEDICAL ELECTRICITY AND RONTGEN RAYS. By Sinclair Tousey, A.M., M.D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Octavo, 1116 pages, with 750 illustrations, 16 in colors. Philadelphia and London. W. B. Saunders Company, 1910. Cloth, \$7.00 net; half morocco, \$8.50 net.

We have yet to see a book which takes up the whole subject of the therapeutic and diagnostic uses of electricity in medicine which is as complete and comprehensive as Dr. Tousey's splendid new book. The work is encyclopedic in character, yet it is by no means ultra-technical. We confess to having tried long and fruitlessly to find some more or less out-of-the-way phase of this immense field that had been overlooked by the author.

This book will immediately take a place as *the* reference work on this subject, and will supplant all save a few books which will still be used because of their author's individuality. We predict for this book a ready and extended sale, and this in spite of the size and price. One willingly pays even seven dollars for a book *if it is worth it*.

We confess that until this book came to hand the name of its author was unknown to us; but we are confident in saying that before long the names "Tousey" and "Medical Electricity" will be almost as closely related as have "Osler" and "Practice."

PRACTICAL HYDROTHERAPY. By Curran Pope, M.D., Professor of Physiotherapy, University of Louisville; Superintendent Pope Sanatorium, etc. Cloth; 8vol.; 646 pages; 128 illustrations in half-tone. Cincinnati Medical Book Company. \$6.00.

In the six months that have passed since the publication of this book many opinions about it have been expressed in book reviews and personal statements. Every one unites in praising this book; and the reason for the unvarying favor with which Dr. Pope's masterpiece has been received is quickly apparent when one takes the time to look it through.

The book is divided into two sections; in the first of which the history, physiological action and technic of hydrotherapy is considered. The chapter devoted to the equipment and operation of hydrotherapeutic institutions can be heartily commended. In writing the book, it is evident that the author presumes that the physician knows nothing of hydrotherapy, as the descriptions of the various applications are given in detail, so that any physician can follow out the treatment. This section of the work is profusely illustrated, with most excellent half tones, showing every detail of the various water treatments. The second section deals with the clinical application of water to individual diseases, and here full instructions are given as to which treatment to use, how to use it, its temperature, duration, etc., so told that the family physician can administer the treatment. This is rather a unique departure from the ordinary book of this kind, which leaves much unsaid and makes it difficult for the family physician to utilize this valuable method at the bedside. One is struck with the wide scope that the science of Hydrotherapy oc-

cupies, and on closer study the contents show that the author is thoroughly conversant with this important branch of physiologic therapeutics.

It is pleasant to read between the lines and to find there that the author is a man of broad clinical experience. The value of any book is increased one hundred fold when it is an expression of the author's personal experience. Dr. Pope has had considerably more than twenty years of close application to a work which has peculiarly fitted him to gain a deep insight into this branch of medicine. In "Practical Hydrotherapy" he has clearly shown the extent of his studies and made plain to the reader the technic and scope of the many hydriatic procedures. The book is well printed, on good paper. Needless to say we congratulate the author on his book and heartily endorse it to our readers.

EXERCISE IN EDUCATION AND MEDICINE. By R. Tait McKenzie, A. B., M. D., Professor of Physical Education, and Director of the Department, University of Pennsylvania. Octavo of 406 pages, with 346 illustrations. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, \$3.50 net; Half Morocco, \$5.00 net.

One of the most important things in this book that impressed us is the stress that the author lays on the need for exercise and physical development. He deprecates the lack of interest evinced by many individuals, both professional men and laymen. He insists upon the essential need for a greater interest in this branch of therapeutics. He speaks of the dosage of massage and manual movements just as though he were talking of a dose of morphine. And this is right. Too many masseurs and Swedish gymnasts seem to only gauge the amount of vigor put into their work by the amount of superfluous strength that they may have. This is a mistake. Massage should be administered just as carefully as any poisonous medicament, for too much can frequently do irreparable harm, while not enough is absolutely useless.

We were amused by the author terming his subject the "Cinderella of the therapeutic family." Certainly the present attitude of the profession in general reminds us of the cold shoulder that was offered to Cinderella before she found the wonderful shoe. We believe that this book will do much to inculcate a greater interest in the study of gymnastics and the allied measures as a science.

The author's style is not ultrascientific, but, rather, entertaining and concise. The book is, like the usual Saunders book, splendidly illustrated, and we have yet to see another book on this particular subject as simple, thorough and broad as this one.

THE PHYSICIAN'S POCKET ACCOUNT BOOK, devised and published by J. J. Taylor, M. D., Editor of *The Medical Council*, 4105 Walnut Street, Philadelphia. Full leather binding, \$1.00.

This is a handy little pocket book in which the physician can keep his accounts with the least possible outlay of time and bother. Twenty-four pages are devoted to some valuable business lessons which are well worth the price of the book. In addition there are various records and sundry information as well as over two hundred pages for the accounts.

CORRESPONDENCE

Why Every Physician Should Understand Physiologic Therapeutics.

May 27, 1910.

TO THE EDITOR:

"Every specialist must necessarily have a good knowledge of medicine in general." No truer words have ever been spoken, yet how many physicians are to-day recommending Massage, when they do not know how to give it? How many are using Electricity who do not know an anode from a cathode?

At a recent meeting of the Nebraska State Medical Society I took occasion to discuss several papers on this subject. Each of the papers discussed dwelt, in part, on ethics. I firmly believe now, as then, that the way to correct any existing error is *not* by criticism. The discussion of such subjects, while savoring largely of criticism, is indeed wholesome and gives us an idea of how others in our locality view these matters. It is reasonable to suppose that similar ideas prevail in other sections of the country.

The electrotherapist or roentgenologist, I believe, can safely be said to be not guilty of fee-splitting; at least the writer knows of one laboratory where purely referred work is done without recourse to such practice. I believe in doing only that which can be accomplished by the specialty which I practice, and should other care or attention be deemed necessary, the patient is referred back to the physician who sends them to me; with, of course, a consultation at which each knows what the other is doing for the patient. When a physician knows of a line of treatment which is safe and satisfactory for the relief or cure of his patient and does not recommend such method, he becomes a danger to society and humanity would be better off without him.

A short time ago I was discussing conservative gynecology with several lady physicians. Some of them took exception to the removal of uterus and fetus in pregnancy complicated with a fibroid tumor. Occasion was taken to tell these ladies that criticism does not relieve the condition, but that the thing to do first was to learn how to give these patients relief. A thorough understanding of physiological therapeutics will make this plain.

In most ultra-ethical papers the Osteopath and the Chiropractor gets a kick. Now, manipulative therapeutics should have a place in medicine, but it is just as unreasonable to suppose that it can cure everything, as that it would not cure anything. Diseases that are caused by physical disturbances can be cured by physical measures, hence this form of treatment has a true place in medicine and is useful in its place.

Within the past few months it was my good fortune to meet a very busy man who consulted me and asked whether I could not temporarily relieve his hemorrhoids. He told me that an operation had been advised, but that he had to refuse same because he absolutely had to direct his business. In less than two weeks this man, who had been in bed for several weeks, was not only directing his business, but was actually at work. This gentleman feels it a duty to inform his friends. He has not only told his family physician, but several others. He spares no effort to go out of his way to tell those whom he learns are suffering from the

same affliction as he had been. The value of such an asset to one's business is left to the judgment of the reader.

To give you an idea of how much some of our supposedly competent internists know of these methods, I will tell one incident. A physician whose discussion followed a statement which I made at a recent meeting (to the effect that the static wave treatment for the relief of paralysis following anterior poliomyelitis should not be applied too early in the course of the disease, but before cord changes have taken place) said "Some of these cases recover, and some do not. We have no medicine that will relieve them and if we do not give them something they will go to the Osteopath or the Christian Scientist. For this reason I advise you to use your X-ray machine, or if you have none, send them to the man who has one and let him shoot them with the X-ray. I am sure it will not do any good. But do something for them!" Such reasoning as this should certainly be rebuked. This surely is practising medicine. In the first place there is no similarity between the X-ray and the static wave, and a man who does not know when to use either should refrain from recommending them until he has consulted someone who is capable of advising him properly.

Why is electrotherapy not taught in every reputable medical college in this country? Who is responsible? I am not condemning the honest practitioner, nor any set of specialists, but I do believe that it is the duty of every physician to know all the diseases in which bacterial vaccination is helpful, to know where antitoxins should be used, to understand the principles of the therapeutic use of the various forms of electricity, hydrotherapy and the other forms of physiologic therapeutics; and we, as a profession, should know more about the science of manipulo-therapeutics.

With papers such as *PHYSIOLOGIC THERAPEUTICS* there is no reason why every practitioner of medicine cannot inform himself of the various forms of non-drug therapy and with a few books on these subjects he can soon get not only an idea of the work, but a good working knowledge of some of the most important measures we have in medicine to-day.—W. H. Mick, M. D., 430 Brandeis Bldg., Omaha, Neb.

Junod's Haemospasia.

June 2, 1910.

TO THE EDITOR:

In reply to the inquiry of Dr. O. Newell Duvall, regarding Junod's book on Haemospasia, I would say that the English translation was printed in London in 1879 for private circulation, but the name of the publisher cannot be ascertained. An exhaustive search extending over several years has revealed only two copies of this translation, one in the library of the Surgeon General's office, War Department, this city, and one in the library of the Academy of Medicine, New York City. I do not understand how this translation has been so nearly destroyed.

Junod's *Theory and Practice of Haemospasia*, printed in Paris in 1875, bears the imprint "Imprimé per Ordre du Gouvernement A L'Imprimerie Nationale," and can readily be purchased in Paris at the cost of one dollar.

I feel sure that neither Junod nor the distinguished contemporary physicians who bear testimony to the efficacy of his operations ever

understood fully the underlying principle of his successes, otherwise the great value of his derivations would have gained immediate recognition and would have come into general use. "Verily, 'the good that men do is oft' interred with their bones.'"

I believe the successes Junod reports shows that he revealed a hidden spring which, when touched, acts in a harmless way to force Nature to *compensate* effectually in a wide variety of pathologic conditions.—Gustavus Werber, 1353 Q Street, N. W., Washington, D. C.

[An abstract of an excellent paper entitled "Junod's Blood Derivations," read by Dr. Werber at the last meeting of the American Electro-Therapeutic Association and published in *The Journal of Advanced Therapeutics* for May, 1910, will be printed in our next issue.—Ed.]

A Good Suggestion—Enteroptosis.

May 20, 1910.

TO THE EDITOR:

Your journal is a praiseworthy enterprise. There are several excellent periodicals on Physiologic Therapeutics published in Germany, and since they have been published for many years they must have been appreciated. It is certainly difficult to start a new medical journal, but you will be at once successful—very successful indeed—if you give your journal a new feature of which I have been thinking a great deal. Bring *full translations*—not merely extracts—from foreign languages (especially from the German). Make this the main object.

Your own paper on "Indicanuria and Enteroptosis" (please do not write "Enteroptosis") has interested me very much, for I have demonstrated in numerous publications, especially in my book "Atonica Gastrica" the relations of abdominal relaxation—relaxation of the abdominal muscles and ptosis of the abdominal organs in consequence—to different morbid conditions of digestion, metabolism, circulation and innervation. It is certainly of importance to investigate how much indicanuria may depend on atonica gastrica, enteroptosis, splanchnoptosis or gastroptosis—immaterial which name we select when speaking of abdominal relaxation.

As to treatment I beg to refer to my numerous publications in which I have described the abdominal plaster belt introduced by me, and have demonstrated its superiority in many instances over the abdominal supporters made by bandagers.—Achilles Rose, M. D., 173 Lexington Avenue, New York City.

An Interesting Case.

June 9, 1910.

TO THE EDITOR:

Many thanks for recommending Dr. Tousey's book. I am more than pleased with it. It is very good.

I had an interesting case the other evening. A good healthy, well-developed man of 38 years, while standing on the ground, swung a No. 10 bare copper wire (while holding one end in each hand) against a 10,000 volt electric wire. He laughed, said "I got it that time," took three steps, dropped to his knees and fell on his face. I had him carried to my office where I tried oxygen and galvanic current, 30 volts, 20 m.a., interrupted twenty times a minute. The positive electrode was at the back

of the neck and the negative to the sternum, and later to the abdomen. Although the heart was beating, it was absolutely impossible to move any of the chest muscles at all. By moving the negative electrode to the abdomen I was able to produce a faint abdominal breathing. The chest seemed as though locked in a vice. Not a muscle moved, save in the neck and abdomen, although later I carefully raised the current to 70 volts and 400 m.a. He died of slow asphyxiation.

I had a man stop breathing whilst under chloroform anesthesia. The heart beat was imperceptible. I revived him very promptly with the interrupted galvanic current.—Omar T. Cruikshank, M. D., Carnegie, Pa.

[These cases of shock from high voltages are practically hopeless from the start. Personally we have sweat hard over two cases without results. It would seem here that the Habberley Resuscitator referred to under our St. Louis items might have saved the life in conjunction with the proper muscle stimulation.—Ed.]

Scientific Dietetics.

June 4, 1910.

TO THE EDITOR:

During the last decade Physiologic Therapeutics has in its thirteen or more forms come to claim its own as at no former period in the history of medicine. They constitute our armamentaria *par excellence* besides our Materia Medica and Therapeutics. What the profession is looking for now is periodicals and works on Dietotherapy which treat of this subject in the full sense of the word. We ought to know the physiologic effects of each and every article of diet.

The usual stereotyped chemical formula of this and that article of diet does practitioners about as much good in treating disease as does the chemical formula of some synthetic coal-tar derivative towards indicating its therapeutic use. There is in consequence a lamentable ignorance of dietotherapy. Almost daily I see where doctors do more harm with the diet they permit than they do good with the medicine they prescribe.

The vast majority of the berries, fruits and vegetables we eat have a distinct and decided therapeutic effect when eaten; as much so as the medicine we prescribe. We let the pharmacist make and compound our prescriptions, but it is our province to direct when and how to use or take them. Why usurp the province of the nurse or cook? To direct the *quality* and quantity of the patient's diet is inherently the physician's sphere, and this is dietotherapy.—J. W. Seip, M. D., Erie, Pa.

[Dr. Seip is right. We are on the right road and hope to really understand the science of dietetics some day. There is more, to every one of the thirteen or fourteen branches of "physiologic therapeutics" than any of us believe.—Ed.]

Importance of Electrotherapy—Prophylactic Medicine.

TO THE EDITOR:

The medical profession has gone wild on "merely dosing of medicine." So many think that a dose of a certain medicine will just stop the disease, they fail to remember that they cannot *make* a single cell, but can only do certain things that will give nature a better chance to do the work. Herein lies the whole science of the practice of medicine. If a certain part of the body is too hot (that is, if the temperature is too

high), for Nature to replace a broken-down cell with a new one, then whatever the physician does to reduce the temperature to a point where Nature can work successfully, is a factor in benefiting the patient.

The better class of physicians have long since abandoned the idea that the mere dosing of medicine is the end to be sought. Hydrotherapy, massage, dieting, hygiene, rest—which includes both body and mind. There is no one agent that will meet more indications to put the human economy on the road to a proper balancing of its inequalities, than electricity, when intelligently used. Like all other remedies, it cannot be used empirically, with hopes of good to the patient. One cannot remove superfluous hair, absorb growths, or perform cataphoresis with a faradic current. Neither can one exercise muscles in paralysis with a steady galvanic current; but must have a current that is interrupted. Electricity, when properly used, has a great field of usefulness.

In some countries, notably China, physicians are employed to keep people well. Would it not be well if that was the rule in this country? Could we not as physicians do much more good by inculcating hygienic rules, than to try to treat patients who have violated them? Why not be paid for telling them in advance what they might expect, instead of waiting until they had violated all the rules of hygiene, and then try to cure them? Which is the best for the Doctor, and which is the best for the patient?—J. R. Etter, M. D., Crawfordsville, Ind.

QUERIES

The Treatment of Impotence.

Please suggest what form of electricity to use in the treatment of impotence.—T. F. J., Fort Worth, Texas.

No one form of electricity is a specific in the treatment of this condition. On the contrary, good results have been attributed to practically all forms, including galvanic (to prostate, lower spine and perineum), faradism (general and local), the sinusoidal current, vibration and high frequency. Several books on Electrotherapy take up this question. (See Tousey's "Medical Electricity," pp. 482-3, 538 and 563; Eberhart's "Vibratory Technique," p. 109). There is another form of physiologic therapeutics which seems to be giving much satisfaction in the treatment of impotence. We refer to Hyperemia. The work of Bier and others has opened up a wide field of therapy, and the introduction of a device called the "Erectruss" a few months ago has stimulated quite an interest in this particular method of treatment. We have on hand an interesting article discussing this method and giving a record of results which are almost astonishing. We hope to be able to print this in our next issue.

Regarding Rectifiers.

What is your opinion regarding the efficacy of the Alternating Current Rectifier offered by several manufacturers for transforming the alternating to direct current for use with a wall plate?—Dr. G. C. Shockey, Melrose Park, Ill.

The ordinary four-cell Alternating Current Rectifier transforms the alternating current which possesses all of the chemical properties of a

current derived from a battery of cells, which may be evidenced by making any of the well-known chemical tests, such as the coloring of litmus paper or showing the stain of iodine. This current, while capable of performing chemical changes in the tissues, does, however, possess a pulsatory effect, due to an undulation of the voltage, making the application somewhat painful with large currents. A new device has recently been perfected, termed the "Potential Equalizer," which has the effect of equalizing the voltage at the high and low points, thereby removing the undulatory effect and delivering a steady direct current free from pulsation. This new device certainly seems to be a great improvement over anything heretofore offered in the way of a Rectifier.

Testing Small H. F. Coils.

I was much interested in the question of Dr. Henry Dalton on page 57 of your last issue. I want to know just how to gauge the efficiency of a \$25 high-frequency outfit before buying it.—H. J. M., St. Louis, Mo.

How to gauge the value of a high-frequency spark is not as difficult as the average practitioner might assume. If the apparatus is what its name leads you to believe then the frequency should be high, in fact, it should be so high that no sensation can be felt when a vacuum electrode is held within the hand or touched to more sensitive surfaces like the face or even introduced within the mouth.

A coil, the interruptions from which are so coarse that it will give a slight sting when the vacuum electrode is brought against a sensitive surface, does not deliver any high frequency current. The vibrations of the interrupter must be extremely rapid to overcome any possible painfulness of the current, and furthermore at the vibrator contacts there should be no disastrous flashing, which go to show that the condenser instead of flashing through the Tesla coil is discharging across this gap, thus causing slow discharges. Simply viewing the discharge of the Tesla coil across to its primary spark gap will also give a fair idea of the value of the current. If this spark seems to come in bolts or flashes which are whiteish then the frequency is slow, but if it seems to rise in a perfectly smooth, even caterpillar spark, which is of a reddish hue, then the frequency is high and smooth.

Again the volume of discharge may be tested by means of an ordinary incandescent lamp. Take, for instance, a 2 c. p. 115 volt lamp and touch one terminal of this lamp to the high-frequency coil and the other terminal of the lamp to the spark gap, between which ordinarily the high-frequency discharge takes place when the current is not being used. If the discharge is of a good volume it should be able to light such a lamp which has a resistance of about 2,000 ohms and consumes about 50 milliamperes of current.

Comparing different types of coils with such a lamp bulb will give a fair idea regarding the current volume discharge from the high-frequency apparatus.

Anger is a habit. Give way to it once, and the next time you will have to fight it.

THE EDITOR'S PERSONAL PAGES

This is a bi-monthly journal; that is to say it is published *every second month*. This will answer several inquiries as to what had happened to the June issue!

* * *

I wish every reader of *PHYSIOLOGIC THERAPEUTICS* would take upon himself the task (?) of securing at least one new subscriber during July. From all that has been said and written regarding the initial number it would seem that my request here for your active, hearty and continuous support is not an imposition on your good nature. Your co-operation, doctor, means much to the success of this journal. May I not depend upon it?

* * *

The most encouraging thing about this new journalistic venture has been the cordiality evinced by my correspondents. Of course, not all of those receiving the first issue of *PHYSIOLOGIC THERAPEUTICS* took occasion to write me their ideas, but those who did write were evidently pleased. To show you just how the journal "struck" some of these men—both practitioners and medical editors—I am printing elsewhere a number of excerpts from letters and current medical journals. I hope you will be as pleased as I was.

* * *

I spent a very pleasant week at St. Louis, June 4-11. I was entertained by my good friend, Dr. T. G. Atkinson of *The Medical Brief*, and had a splendid time. My booth at the A. M. A. Exhibit—No. 82—was the scene of many animated conversations, and I was glad to meet so many friends there whom I had never met before. It's good to have a lot of friends—one does not realize it until their friendship is manifested in some definite way. More than one doctor came to me bringing a friend with the jocular hint, "Here's another victim," or "Separate this man from another dollar." And I generally managed to do it, too. This co-operative assistance of those who are friendly to me or my journal is a great help. I appreciate it.

* * *

In another part of this issue will be found a rambling description of a number of things at the Exhibition that were new to me, and which I thought would be of more than passing interest to readers of *PHYSIOLOGIC THERAPEUTICS*. The whole of the large Coliseum at St. Louis was devoted to call-

ing the attention of the visiting physicians to the merits of a multitude of instruments and remedies. If you were there you saw these articles mentioned; if you were not, you will be glad to get in touch with them in this way. I do not feel that I am lowering the standing of the journal by mentioning names and addresses, for if you are interested you can get just as much information by mail as any visitors did at the exhibits. There were some really fine things there that you ought to know more about.

* * *

You will notice that this issue contains 96 pages instead of 80. Most of the additional pages are devoted to new advertising, and I assure you that it is an encouragement to me to have to make this addition. Naturally I am anxious that this advertising should "make good," and I need hardly say that I shall be glad to have you make inquiries regarding any or all of these propositions. It is a great help to an editor (who has the whole burden of a journal, and not merely the purely editorial function) to know that his advertising "pulls," and I am entertaining fond hopes that every advertisement in *PHYSIOLOGIC THERAPEUTICS* will pay the advertiser and help the reader. Do not hesitate to answer a goodly number of these ads, and be sure to give this journal due credit.

* * *

A correspondent, Dr. Frank M. Taylor of Portland, Ore., writes: "I have carefully read everything in your first issue of *PHYSIOLOGIC THERAPEUTICS* and am impressed with your aims and conservatism. I certainly wish you every success in your venture and trust you will steer clear of the rock of radicalism upon which so many similar ventures have been wrecked." I surely enjoy such straightforward statements and agree heartily with Doctor Taylor that radicalism has killed many a journalist. I quote this here to call the attention of my readers to a favor which they may easily do for me personally as the editor of this journal, and for themselves as readers. *If you have any criticisms or suggestions to make—DO IT NOW.* Maybe there is something that you don't just like, or that you think could be done differently. Write to me—it won't take up much of your time and I'll be ever so much obliged.

Apropos of criticism, you may remember a very short editorial printed on page 6 of the May number. Only one actual criticism resulted from this. Here it is: "The one criticism I wish to make is this—why did you not do it before?" This is encouraging. We won't worry as to why I didn't do it before, but rather busy ourselves in trying to do it again. What do you think of this second issue, anyway?

* * *

I hope that I will be forgiven for writing this paragraph. It is very personal. This new book that I have in preparation looks as though it was going to be quite a book—that is, it will not be a 32-page pamphlet. I am in hopes that many subscribers to *PHYSIOLOGIC THERAPEUTICS* will see fit to honor me with their advance order for a copy. I shall hope to give you good value for your money. If I don't you can always ask for your money back—and get it. Try a copy, and if this first one "takes" I'll write another one some day. I imagine the title as being something like this: "Practical Laboratory Work for the Busy Physician." How does that sound?

Quite a number of my friends already know I am personally carrying out some laboratory research work into certain phases of the metabolism, as evidenced by certain urinary findings. I am desirous of corresponding with physicians who are interested and who would care to co-operate with me in this work. This will, without a doubt, be of mutual advantage, and any interested by this brief notice might with advantage communicate with me at my Chicago office. Mark your letter "Personal."

* * *

Maybe you have some friends in far-off lands who might be glad to get *PHYSIOLOGIC THERAPEUTICS*. Already I have subscribers in England, Scotland, Germany, France, Denmark, Switzerland, India, China, Japan, South America, and even the islands of the sea. And of course there are a few here in America—in fact, they are to be found in every state and territory, not excepting Alaska and Hawaii. Naturally, this is very encouraging to me, as it must be remembered that this present issue is only the second.

With this issue I am starting an "Over Seas Edition," which will be especially prepared for those abroad. It will be printed on thinner paper and the cover will be slightly different. Do you want to send a copy to some distant

friend for a year? Costs five shillings (\$1.25) with the postage prepaid ANYWHERE.

* * *

It is certainly no pleasure to have to announce that *The Backbone Monthly* has been suspended. It was advertised in my May issue and I had intended to send it to those of my subscribers who cared for it. The four or five numbers that were published were every one of them splendid from cover to cover. I was much mortified when I heard this news. Now those who asked me to "Stiffen my spine with Backbone" must try to get along without it.

* * *

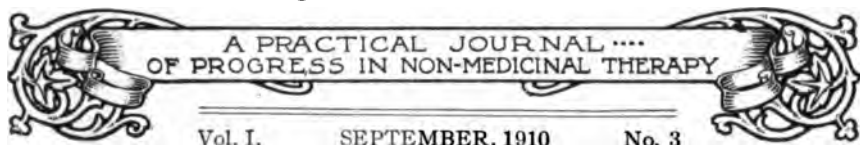
Will you forgive me for saying something more about my advertisers? You know that a successful journal is not successful simply because its reading pages happen to be worthy; nor, too, because its advertising department is well filled. It must PAY—"deliver the goods"—"make good." Now I hope you will remember this and take a few minutes to write and find out about some of the propositions offered in my advertising pages. You will find that everything advertised in *PHYSIOLOGIC THERAPEUTICS* is absolutely dependable and worthy of your confidence. If you become interested in any article and should happen to spend some of your money, so much the better—for you, for the advertiser and for me. Don't forget to give this journal all the credit you consistently can—IT'S NEEDED.

* * *

There is going to be another journal devoted to physical therapy. A brief note of welcome will be found in my editorial, "Another New Journal," on page 65. Since writing this I have learned more about *The Journal of Physical Therapy* and will make room for another announcement here. This new journal will be published in Boston by the publishers of *The Journal of Therapeutics and Dietetics*. Like my journal, it will be published bi-monthly, at \$1.00 a year, and the first issue will appear early in August. So you see, with a combination of these two journals the reader will get a monthly journal for \$2.00 a year—no, we'll make it \$1.50 for new or renewal subscribers to *PHYSIOLOGIC THERAPEUTICS*. If you are interested, drop me a line.

Henry R. Harrower.

THE AMERICAN JOURNAL OF
Physiologic Therapeutics



EDITORIAL

THE RENAISSANCE OF NON-DRUG THERAPY.

Physiologic Therapeutics is at present more appreciated than ever before in the history of Medicine. We are in the Renaissance of non-drug therapy.

A large amount of original work is now being done in the special lines of therapeutic endeavor than come under this head. Numerous excellent books have been and are being published on Hydrotherapy, Electrotherapy, Phototherapy, Radiotherapy, Hyperemia, Dietetics, Mechanotherapy, and Vaccine-therapy. (There are now nearly a hundred of them in the English language, not to mention twice as many more in German and French.)

Those interested in the teaching of medicine are beginning to wake up and chairs covering the several branches, or of physiologic therapeutics as a whole, are being established in the leading institutions of medical learning. Post-Graduate Schools, too, realize the change in therapeutic opinion and are equipping themselves to offer special courses in both the theory and the practice of the various non-medicinal methods of treatment.

Papers are constantly being read or monographs written which tell the progressive reader of recent clinical and technical experiences with physiologic therapeutics. A wide-spread interest is being aroused, and rightly so, for in non-medicinal therapy lies an immense field of therapeutic usefulness.

Inventors and manufacturers are making the most of the spirit of progress that is in the air. Advances are being made almost daily in the conception and perfection of the equipment of the physician who is getting away from the medicine case or the prescription pad alone.

Align yourself then with the trend of events, and acquaint yourself with this vast growth.

THE INFLUENCE OF COFFEE.

The recent receipt of a very interesting reprint from the *Chicago Medical Times* entitled "Coffee—a Drug" by Dr. R. M. Sterrett has suggested to us the following:

The fact that coffee is at once a habit-forming drug and one of the leading "staples" among the foods of the country is worthy of a few passing thoughts. If the medical profession would enlighten the laity regarding the dangers of coffee-drinking it would be to their own lasting benefit, for would they not be much more successful in their efforts to cure the hundred and one various ills about which they are daily consulted?

Take as an example a very common condition—dyspepsia. No form of therapeutics, whether physical or pharmacal, can ever succeed in securing the desired end-result when the patient persists in continuing the pernicious practices which either directly or indirectly are the cause of the disturbance.

The common habit of coffee-drinking at meals is a factor of far greater importance than we have yet realized in the prevention of the successful treatment of many forms of disease; and until this fact is stated in no unmistakable terms both in our medical schools and in our consultation rooms, Medicine will continue to carry a millstone about her neck.

We are reminded here of a scene described so vividly in Bunyan's "Pilgrim's Progress." In the Interpreter's house Christian was shown a scene in which there was a fire upon which one was pouring water in a vain effort to quench it. On asking why the fire was not put out, the interpreter showed him behind the fire another form assiduously pouring on oil. Aside from the religious moral that this incident was intended to convey, we can, with advantage, use the illustration in an attempt to show our patients the proper light in which to view this coffee question. It is absolutely useless for the medical adviser to continue to pour on water whilst the patient persists in pouring on oil. The fire cannot be quenched.

Not only should coffee be interdicted to those who have to consult a physician; but, wherever possible, its use should be decried in the well, for unquestionably it leads to many complex disturbances of digestion, metabolism and elimination. The emunctories have their full quota of work in disposing of the normal wastes of the body, without being overburdened by the addition of other poisons. It should be remembered that chemically considered caffeine is not merely an alkaloid with a strychnine-like action, but that it is tri-methyl-xanthin, and its xanthin-like effects are far from salutary.

The use of certain widely advertised "soft drinks" should be mentioned here. A glass of these proprietary drinks contains practically the same amount of caffeine as a cup of coffee, and the manufacturers are making much of this fact. The "coke" drinker is as badly off as the coffee drinker—he "has to have" his drink. And yet many members of the medical profession not only make use of such drinks and drink coffee, but condone with their use by their patients and then wonder why their treatment is not more effective.

We are absolutely appalled when we stopped to figure out that, granting that coffee contains a minimum of only 1 per cent of caffeine, nearly two ounces of pure caffeine are consumed each year by every one of the 90,000,000 inhabitants of this great land. Here is something to weigh carefully—no wonder Post says: "There's a reason."

The introduction of many of the so-called "coffee-substitutes," notably "Postum Cereal" and other similar mixtures, has done much to diminish the tremendous consumption of coffee. Now comes Merck with "Dekafa," a coffee from which the caffeine has been extracted. We have heard of no bad effects from the use of either of these, but we do know that in spite of the aroma and the flavor neither Dekafa nor Postum will give the confirmed coffee drinker the indescribable "something" for which his system has been taught to crave.

BACTERIOTHERAPY.

This, the most recent addition to the already extensive list of measures which rightly come under the head of "Physiologic Therapeutics," promises to occupy no inconspicuous position. The epoch-making researches of Professor Elie Metchnikoff of the Pasteur Institute in Paris have brought the status of this means of treatment to a position from which it will be a hard matter to dislodge it. The study of the administration of certain bacteria (either as a medicament or, preferably, as a food), bids fair to equal if not rival that of Vaccine-therapy.

Like everything else that is new and, comparatively speaking, untried, the possibilities of Bacteriotherapy have been woefully overstated by some manufacturers in their zeal to increase their profits. Without a doubt all of the various strains of lactic-acid forming bacilli have, when taken internally, some therapeutic value; but in all probability this is due for the most part to the lactic acid that is a by-product of the action of these germs on milk.

Metchnikoff, Grigoroff, Massol and other equally earnest bacteriologists have isolated from certain Bulgarian products a germ which of itself—aside from any products that its activities may manufacture—has a decidedly favorable effect upon conditions as they are all too frequently

found in the human intestine. The germs themselves perform a function which is at once remarkable and full of therapeutic possibilities.

It will not be within our province here to relate the gist of the findings of investigators to date. This will be done by a new aspirant to medico-literary honors—*Bacteriotherapy*—a quarterly journal, the first issue of which is before us. In a recent communication to the editor—his address is given below* for your possible convenience—we mentioned the fact that in spite of much excellent material in the first number, in our minds the journal savored very much of a house-organ. Not, mind you, that house-organs are superfluous, even when considered purely from the standpoint of their informative function. We confess that we always read with much interest "*Therapeutic Notes*," "*Helpful Hints for the Busy Doctor*," "*Clinical Excerpts*" and "*The New Idea*," all of which are nothing else if they are not house-organs and business getters for their respective publishers.

A retournez a nos moutons—we received a very friendly answer from Mr. Wilbur M. Bates from which we quote: "The first issue, so much space having been given to the subject of lactic ferments and to advertising the Metchnikoff preparations, has more of the appearance of a journal of trade than we like. We think future issues will show you that the main purpose of this publication is really to convey to the doctors valuable scientific information."

At all events Bacteriotherapy is a coming factor in both disease prevention and cure, and if you want to keep up with the trend of events you must study it and study closely.

A COLLEGE OF NATUROPATHY.

Up in Minneapolis they are starting a new school of medicine. Last June was incorporated the Northwestern College of Naturopathy where it is proposed to teach drugless medicine. The announcement of this new institution contains several statements that are so well put that we reproduce them here with the object of adding a few words of comment:

"Fully realizing the success and scientific exactness of Drugless Methods of Healing, being based upon natural methods which assist Nature to perform her functions in a natural way, and that a perfect understanding of the human body and its normal functions are absolutely necessary for the most successful and scientific application of naturopathic methods, the founders of the Northwestern College of Naturopathy have made it possible that all practitioners in the Drugless Art of Healing may place themselves not only on the same educational

*Bacteriotherapy, Box 126, Madison Sq. P. O., New York City.

plane with the older schools in the practice of treating diseases, but in many instances therapeutically above them because of more exact methods.

"The discovering of a healing method or methods or principle does not necessarily mean the successful application of the same. The perfection of these methods and their application by a thorough study of all the elements acted upon; a complete knowledge of all the principles entering into constructive and destructive metabolism in the human body must necessarily follow before one should profess to be a practitioner.

"An increasing demand for this educational opportunity proves the success of the drugless methods and the sincerity of the practitioners in their desire for a higher educational standard; also suitable laws governing these drugless methods, that they may have proper recognition and protection against unscrupulous persons who think they may see a chance to reap the rewards of practicing the healing art without the arduous labor and financial outlay necessary to preparing themselves for intelligent effort.

"The collective term Naturopathy has been coined for the purpose of designating a science of healing which makes use of natural curing methods, recognizing that Nature only cures, and that such methods as assist Nature in performing her functions properly, are the only scientific curative agencies."

Now we confess to harboring a feeling of interest in the outcome of this enterprise—the attitude of the "regular" profession in the Twin Cities, the relation that graduates of this college will hold to State Boards of Health and the influence upon the progress of rational non-medicinal therapeutics in general.

Unquestionably there is a need for just such special training as the calendar of this college informs us is taught there; in fact from a study of the curriculum it would seem that "Medicine," *Materia Medica* and Surgery have been omitted and their places taken by Electrotherapy, Hydrotherapy, Psychotherapy, and Mechanotherapy (including Osteopathy, Chiropractic, Naprapathy, Spinal Adjustments, Swedish Movements, Massage and Rhythmotherapy).

Candidly we do not like the term "Naturopathy." Possibly only because we have before heard of so-called "naturopaths" who were out and out fakers; but we confess, however, that we are glad to see that the non-medicinal methods are here to be given so much prominence.

How much better it would be if some of the useless "dry bones" of present-day medical education were dropped out and their places taken by thorough-going theoretical and practical courses in the "natural methods." Or, better still, the establishment of a school where a fifth year in "Physiologic Therapeutics" was open to those who had graduated in medicine, passed their licensing examinations and wanted to learn

more of that part of therapeutics which is so sadly neglected in the ordinary medical course.

The next decade will witness quite a material change in the course of study given in the majority of medical colleges.

TOUSEY'S NEW BOOK.

Just as we were making up this issue we happened to notice a review of Doctor Tousey's new book "Medical Electricity and Roentgen Rays" written in the *Denver Medical News* (August, 1910), by Dr. G. H. Stover. It struck us as being at once a true and picturesque characterization of a book which we have come to appreciate the more as we study its pages. Here it is:

"The title of this work ought to be 'The Complete, Comprehensive, Universal, Practical and Theoretical Compendium of the Physics, Mechanics, Chemistry, Diagnostics and Therapeutics of Electricity, Roentgen Rays and Radium.' The scope of the work and the amount of exact and detailed information regarding every phase of the subject is simply astounding. If there is anything missing, from the minute of radiogram reading down to the formula of the soldering compound used in making wire connections, the reviewer's knowledge is too limited to recall it. The book is a library in itself on its subject, and there is not space enough in this department in which to give a detailed review of so monumental a work."

'Nuf sed.

Your destiny is in your own hands. Don't ever listen to the false doctrine that you can only get about so far. Don't let any one make you think that you haven't brains enough to do anything that you set your head to do. Those are the things that paralyze and wither your mind and destroys its wonderful creative faculty. Believe in yourself absolutely. Most men succeed in being taken at their own valuation. Self confidence is like a cigar band. It makes you look worth the money.

ORIGINAL ARTICLES

The HEART REFLEX OF ABRAMS IN TREATMENT.

BY VICTOR G. VECKI, M. D., (UNIV. OF VIENNA), SAN FRANCISCO, CAL.

In 1898, Albert Abrams of San Francisco, first directed attention to the phenomenon now known in the literature as the heart reflex of Abrams.

The reflex under consideration is a contraction of the myocardium of varying duration, which results when the skin of the precordial region is irritated. The cutaneous irritant may vary from a spray of ether to rubbing with a towel or a series of percussion blows.

The reflex in question is easily observed with the x-rays, although accurate percussion will show that, after outlining the heart, a notable retraction may be demonstrated after cutaneous irritation. The contraction of the myocardium implicates both ventricles of the heart after cutaneous irritation although as a rule, it is more evident in the left than in the right ventricle. It may also be noted that the myocardial recession persists even after the source of cutaneous irritation is removed.

Merklen and Heitz in the third edition of their work on the heart (*"Examen et Séméiotique du Cœur"*) observe that, while in the normal subject the heart reflex of Abrams may be of short duration, in cardiectasis, it may persist for several hours.

The great diagnostic value of the heart reflex is exhaustively discussed in Abrams' recent work "Spondylotherapy".

The Literature on this Subject.

Respecting the employment of the heart reflex in the treatment of cardiac insufficiency, one finds in the literature only a dearth of information. True, Abrams refers to the subject in his book and observes, that more can be accomplished in a few days by elicitation of the heart reflex in myocardial insufficiency, than by months of treatment with the conventional methods of Schott.

Heitz³ observes that "Le Reflexe Cardiaque d'Abrams" is a good guide by which to determine the probable effect of a contemplated balneologic treatment.

If the size of the heart does not change under excitation of the reflex (by sharp blows over the precordial region), the treatment will be ineffectual or may even be contraindicated on account of the probable development of cyanosis.

In very large dilations and in advanced myocardial degeneration, the heart does not respond to pericardial excitation and is not favorably influenced by baths.

If the reaction is feeble good results may be achieved, but the treatment must be used cautiously.

More recently Zulawski⁴ investigated the "Abrams' sche Herzreflex"

and found that, rubbing or striking of the heart-region reduces the dullness of the heart from one to one and a half centimeters and that it is of prognostic importance in myocardial weakness.

"If one," he continues, "can demonstrate the heart reflex even in high grades of cardiac insufficiency, a good prognosis may be given."

It must be confessed that accurate percussion of the heart is necessary to determine slight differences in the cardiac diameter after precordial excitation, but by the method of percussion advocated by Abrams in his book on Spondylotherapy, the difficulties of this physical method of examination are minimized.

Bloch of Franzensbad, according to Satterthwaite, successfully uses carbonic acid douches for eliciting Abrams' heart reflex in myocardial insufficiency.

Now it has been shown by Abrams that the heart reflex may be elicited from various regions of the body, and in his studies of the amplitude of the reflex in question, he found that the most effective site is the spinous process of the 7th cervical vertebra and that the most effective method is a pneumatic hammer or any similar apparatus giving a percussion-stroke.

Spinal Percussion in Heart Failure

Recently, the writer has had an opportunity of observing the miraculous action of cardiac excitation by concussion of the seventh cervical spine in resuscitating a moribund patient. The latter had an apex pneumonia and during the course of her disease, the conventional cardiac stimulants were employed. Suddenly during the night, however, she became extremely cyanotic and pulseless and it was determined to concuss the seventh cervical spine to awaken as it were, the enervated heart. No percussion apparatus was at command and, in lieu of the latter, the palmar surfaces of the fingers were applied to the seventh cervical spine, and, with the clenched fist, the dorsal surfaces of the fingers were struck a series of short and vigorous blows.

The latter method of concussion was continued for about ten minutes with intervals of rest. Soon after concussion was commenced, the cyanosis became less evident and the pulse was again perceptible. Every two hours during the night this method was continued and thereafter at less frequent intervals until convalescence was established. It was evident to the nurses and others, that after each *séance* of the concussion treatment there was an immediate evanescence of the cyanosis and the pulse always became stronger and less frequent.

Adjuvant Treatment in Pneumonia.

It is conceded that pneumonia is the most fatal of all acute diseases, that there exists no specific medication, and that the most important indication is to maintain the circulation.

I am firmly convinced that the systematic execution of the method cited will prove of material aid in hastening recovery from this dread disease, which otherwise may prove fatal and it is for this reason that I have directed the attention of the profession to the method in question.

An efficient percussion apparatus should be at the physician's command in all acute diseases when there is any danger of cardiac implication. I must emphasize, however, the necessity of a suitable apparatus. The latter must give a percussion-stroke. All other motions, such as oscillations, shaking and friction, yield absolutely no results.

381 Bush Street.

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THE HIGH FREQUENCY AS AN OFFICE INVESTMENT.

BY P. B. THATCHER, M. D., PHILADELPHIA, PA.

Editor, *The Physicians' Business Journal*.

Two years ago the writer first seriously considered the installation of a modern high frequency coil as a part of his office equipment, but solely with regard to the idea expressed by the title of this paper.

Many offices are needlessly encumbered with apparatus of various kinds with which a comparatively short and unpleasant experience demonstrates their unsatisfactory returns, both from the viewpoint of "results," and increased income.

I do not wish to give the impression, however, that the physician who has shown good judgment in the selection of his parentage, is not well justified in taking advantage of every mechanical help considered necessary to the complete equipment of a modern office.

If the item of expense could be eliminated by us all, this paper would never have been written—an additional cause for regret that we are not all financially independent.

In the consideration of this subject, I have more especially in mind the general practitioner with practically no other source of income except that derived from his practice. that derived from his practice.

While the majority of the readers of this Journal are probably well equipped with the appliances necessary for the administration of the various modalities used in Electro-Therapeutics, yet there are doubtless many subscribers who are yet in the contemplative stage, and have been attracted by a Journal of this character for that reason, feeling that they

will receive from its pages much of the information for which they are seeking. If this informal paper proves to be of any benefit to these progressive brothers, both the Editor and the writer will be more than pleased.

Which Coil?

After the writer had finally decided upon the installation of a High Frequency Coil, the question naturally arose—which? Investigation among many of the men having coils at that time, developed several rather amazing facts. (Understand that this applies only to the general practitioners, whose intentions were simply to use the coil as an adjunct to office practice. Specialists in this work were of course thoroughly familiar with all details of treatment.) Several of the men who were consulted really did not know why they had a coil! It evidently looked to them, and, in cases where money was no object, was simply regarded as a rather impressive piece of furniture, whose uses would be learned "some time."

Others used the X-ray alone, and then only in the verification of the proper adjustment of fractures. Several reported that they had had the coil in the office for several months, *but had never used it once*. But when the question of which coil to select was suggested, and why, the answer was positively negative.

A specialist was not consulted because the writer did not wish to get into the work too deeply, and also for the reason that, like the bicycle arguments of a few years past, each man had the best one.

After as careful and cautious investigation as the limited data at that time afforded, a coil was finally selected, the name of which, for obvious reasons, will be furnished direct should any readers be sufficiently interested to inquire. This coil has given perfect satisfaction, combining thorough reliability with the desired appearance. After more than two years of fairly hard usage, it is as good today as when it was received.

The amount of electricity used is very small, and I cannot too strongly urge upon any of the profession who have this matter under consideration, to make the plunge without further delay, and if intelligent selection is used, the returns will be more than satisfactory.

Bear in mind that you have gone into this as a matter of business only. Push it. Explain the results to be expected to your patients, and the coil will soon be more than paying for itself, and you will be getting work and patients, which otherwise you would not have. Then let us read a few of your results in the pages of this Journal, and I am sure they will be at least as interesting and satisfactory as the following few cases, which represent fairly well the possibilities to be expected from a coil with relation to general office practice:

Several Interesting Cases.

Miss. S., age 32. Had been suffering from an extremely profuse acrid leucorrhea for nearly ten years. She had been treated by several well known practitioners, both privately and in hospitals, with absolutely no permanent beneficial results. She had been curetted several times, and had had such a variety of local treatments, that she was seriously considering the choice of two evils—suicide or Christian Science,—when she very reluctantly came under my care. She was thoroughly disgusted with all methods of treatment, so the psychic effect of the coil may be entirely eliminated.

The patient was gradually losing weight, the appetite was poor; she could not go into the city for a short shopping trip without returning with severe headache and backache, and in a condition of partial collapse, etc.

She was cured by fifteen-minute treatments, vaginal electrode, three treatments each week until decided improvement was shown, then two treatments each week until discharged—in all twenty-two treatments. Patient gained sixteen pounds, and has had no recurrence in the past eighteen months.

Mr. L., age 36. Married. Acute right sided neuralgia of head and face. Duration nearly two years, in recurrent attacks, which invariably would awaken him from a sound sleep. The Homeopath would say Lachesis. He had it, also a various assortment of treatments from the several physicians who had attended him at different times. Could get no relief, and was another prospective suicide. Cured by twenty minute treatments by the surface electrode over affected area, whenever the preliminary sensitiveness of the face and scalp, preliminary to another attack, was manifested.

Mrs. H., age 68. Obstinate leg ulcer of several years standing. Various astringent and stimulating salves, washes and powders which had been used, only seemed to irritate. Area of involvement was gradually increasing, and old lady greatly distressed. Cured by surface electrode in twelve treatments. Perfect granulation and no recurrence in over six months.

As my space is limited, I will not risk an application of the blue pencil by the presentation of any more cases, many of which are equally satisfactory in results, and many which are just the reverse.

This does not pretend to be an exhaustive treatise on High Frequency, which can much better be presented by one devoting his entire time to Electro-Therapeutics. It is simply a few informal remarks intended for the encouragement of those who are as yet contemplative.

The High Frequency Coil certainly has its field of usefulness, and

when suitable cases, decided to be such by the experience of the operator, are placed under treatment, its use will always give satisfactory results.
310 Bulletin Building.

MASSAGE IN MODERN THERAPY

BY A. W. HERR, B. S., M. D., CLEVELAND, OHIO.

Massage, as a method of treating disease, is as old as surgery, and "its origin has been lost in the night of antiquity." No remedial agent dates from such a venerable past, no other has gained so much renown and found such widespread, useful application as massage. In ancient times the uncultured tribes of Africa and of the South Sea Islands, the Chinese and the Hindus used some form of it as the universal remedy in disease. "Cong-Fou of the Tao-Sse," a work written in Chinese about 1000 B. C., and translated into French, undertakes to explain the procedures of massage.

The Romans made use of it in connection with their splendid and magnificent baths. Hippocrates, the father of medicine, called it *anatripsis*. Galen, whose authority in medicine was supreme in Europe for a thousand years, used it and gave minute directions for its application.

P. H. Ling (1776-1839) systemized these manual movements, and in 1813 established at Stockholm, the Royal Central Institute, where for nearly a century, physicians from all parts of the world have made pilgrimages to become conversant with these methods of physiologic therapeutics.

In more modern times, and in our own country, S. Wier Mitchell, Graham, Taylor, Kellogg, and others, have applied these movements to therapeutics, and have taken massage from the hands of ignorant empirics.

Massage Produces Definite Results.

By a careful application of its methods to diseased states, massage has been raised to its proper dignity as a therapeutic measure, and placed along side electrotherapy, phototherapy, hydrotherapy and dietetics. As a scientific agency, massage possesses certain curative powers, and, when properly applied, definite physiological results may be expected. To obtain these results the treatment must be given by a physician well versed in the art, or given under his direction by a masseur thoroughly trained in the technic of massage, and acquainted both with the anatomical structure and physiological workings of the human body.

Now the life of the body is contained in the blood; each living cell of the many billions composing the body selects from the blood stream the pabulum best suited to its growth and repair. This would

necessitate the production of a quality of blood containing those elements best adapted to the varying needs of the individual cells. In the differentiation of the body cells we have resulting nails, hair, cartilage, nerve, bone and muscle, each demanding of the blood those elements best suited to its own particular needs.

The essential element of inorganic life is the crystalline structure; the growth of such matter differing widely from that of organized life. The growth of a stone, for example, is by accretion; the process of gathering to itself matter of its kind, of adding to its volume, is from without. While the essence of organic life is the cell, the individual cell, with its protoplasm and limiting membrane, and its growth and repair are maintained by the process of intussusception; that is, from within. Each cell, bathed in its nutrient fluid, has ever at hand those elements, "the brick and the mortar," by which its structure is reared, kept in repairs, and reproduces its kind. This emphasizes the necessity of maintaining from the earliest moment of fetal life until dissolution of the body composite, a constant equalized circulation of the blood throughout all portions of the tissues and organs of which the body is composed. Action is the very condition of life, and habitual action of the muscular system is nature's method of maintaining life by thus forcing along in their channels the lymph and the blood.

Exercise, to be of material benefit, must be taken daily, not exercise of 30 per cent of the muscles, as in walking, but exercise of all of the muscles, as is obtained in spading, hoeing and in digging. But conditions of modern life are such that the majority of mankind can not lead the life of a husbandman, so in our cities there is need of adapting some system of gymnastics that will bring into play unused muscles. However, through illness or lack of training, there are those who can not avail themselves of even this system; massage here finds a place in building up the forces of the body, or it may serve as a substitute for exercise.

The Influence on Nutrition.

In massage there is secured to the invalid the benefits of exercise without the usual expenditure of energy necessary to secure such benefits. In this way we conserve nerve force. Again, the brain and spinal nervous system draw the aliment from the muscles. The nutritive centers of the nerves are in the muscles. In other words, the nerves feed upon the muscle fibres. So if the muscles are developed to proper proportions, the nervous system will more likely be kept in normal tone. This fact is frequently made use of by the intelligent physician in the treatment of functional, and even organic diseases of the nervous system. Patients are put through a series of active and passive movements which develop muscle, and, secondarily, increase nerve force. Passive move-

ments having an advantage in this class of cases, since in active movements, in order to derive these benefits, there is a certain amount of muscular and nervous energy expended, while in massage this nerve and muscle energy is saved to the patient.

Massage has proven to be a great aid in the treatment of valvular lesions and dilatation of the heart, and by massage we embrace those active, passive, assistive and resistive movements called "Swedish movements." Massage reflexly influences vaso-motor nerve centers, and the vaso-dilators, acting over a considerable surface of the body, will tend to diminish total blood pressure, and for this reason it has been used with such great success in these cases; and also when the heart is undergoing a strain, as in pneumonia and typhoid fever. In these diseases the increased leucocytosis induced by massage is highly desirable.

General massage causes a slight rise in blood pressure, quickly followed by a permanent fall of pressure, due to peripheral resistance being lessened through arteriole dilatation. Superficial massage causes a rise and deep kneading of the muscles causes a decided fall.

Stewart says, that "in cases of cardiac dilatation the area of cardiac dullness diminishes perceptibly during each administration of massage; that the cardiac sounds, the rhythm and strength of the pulse correspondingly improve; that the patient usually experiences a sense of comfort, and feels the better for the treatment; that repeated applications of massage bring about a permanent diminution of the area of dullness, with improvement of pulse and the patient's sensations." By equalization of the circulation by which the capillary flow is improved and congestion of internal organs removed, massage supplements the heart force by dilating these surface vessels, and thus lowers blood pressure, and diminishes the pulse rate, when excessive.

Massage Increases Oxidation.

Increased oxidization results through those chemical changes taking place in the tissues, by which food products are disintegrated and waste products oxidized. Massage enables the blood to take up a greater amount of oxygen, by increasing the chemical changes in the tissues. More heat is induced both through mechanical and chemical means, and often through the increased nutrition we have abolition of pain.

Through manipulation of the tissues, reflexes are induced which, through the nerve centers in the brain and spinal cord, are transmitted to other structures, especially acting upon the glandular system, thus increasing both secretion and excretion. There is induced a greater flow of the digestive fluids, of bile, and of urine.

Professor Colombo, of Turin, through experiments upon animals and men, demonstrated that massage doubled the secretion of gastric juice, and increased the flow of bile, saliva, tears, sperm and sweat.

Undue nervous activity, as in chorea, hysteria, epilepsy, spasmodic affections, and in insomnia, are greatly benefited by massage. The muscular activity thus induced suspends the nervous excitement by more blood being brought to the muscles and less to the nerves.

The brain and spinal cord virtually have their peripheral ending in the skin. The smallest area contains a matting of nerve plates and endings. The manipulation of the skin serves to originate impulses here which are transmitted inward to the centers. Hence, we have at hand a powerful means of toning the nervous system through stimuli applied to these nerve endings. Sedative movements, as stroking, will induce repose and sleep, while, on the other hand, percussion and vibratory movements serve to arouse and give tone.

In what manner does massage act, in a curative way, in diseased states? Take, for example, obesity, diabetes and rheumatism. There is a common etiological factor present in each of these states. All three have present imperfect oxidation of food material—the metabolism is impaired. Carbohydrate food elements are imperfectly burned and deposited as adipose tissue or pass out as sugar in the urine. The proteid elements, particularly flesh foods, are imperfectly oxidized into uric acid and other bodies, and circulate in a crystalline form in the blood stream, blocking the capillaries in the joints, in the sheaths of the muscles or in the nerve sheaths, causing joint rheumatism, lumbago or intercostal neuralgia. Massage by increasing oxidation greatly benefits these cases. After treatment of this nature applied to the whole body, an analysis of urine will reveal greatly-increased solids, indicating more active metabolic changes and increased activity of the emunctories. A clear intellect, augmented powers of the entire body, a general feeling of well being follow a massage treatment.

Massage is a means par excellent of improving a feeble circulation, of stimulating the skin and of strengthening muscles. The blood of the anemic becomes augmented by red-blood corpuscles, brought from their lurking places in the bone marrow, the spleen, and the liver, out into the circulation, where they increase the oxygen-carrying power of the blood, while leucocytes are proportionately increased, augmenting the phagocytic power of the blood, and also its power to regenerate worn-out tissue.

By the stimulation of the skin we supplement the work of the kidneys and other organs of elimination; a great desideratum when the physician has to deal with an acute nephritis.

The Value of Nerve Compression.

One important procedure of massage quite generally omitted or overlooked by the masseur, is that of *nerve compression*. Indeed, the extent of his knowledge is usually confined to compression of some of

the branches of the facial nerve for the relief of toothache, or of migraine. He remains in ignorance of the vast field of usefulness open before him in a knowledge of pressure as applied to the posterior spinal nerve branches. Through these branches we reach the spinal nerve centers, and reflect an impulse along the anterior branches of these same centers which reach nearly all the viscera of the body. Indeed, all the organs of the trunk contained in the thorax, abdomen and pelvis can be reached through these centers. Brief pressure serves to stimulate, and prolonged pressure inhibits these centers. We may relieve pain or hasten the flow of blood through an organ connected with these centers. A brief pressure, applied along about the second to fourth dorsal spine, will cause a quickened pulse-rate through direct stimulation of the heart, or the stomach can be filled with water, and by a prolonged two-minute pressure on the fourth dorsal spine the pyloric muscles will be caused to relax and allow this water to pass into the intestines. A sluggish-acting liver or bowel can be stimulated in this manner, or a pleuritic, gastric or appendiceal pain can find instant relief.

In the treatment of colics and diarrheas of children massage is an invaluable aid. It gives relief in swollen glands of the neck, and tonsillar swellings.

Five minutes of massage will allow a fatigued muscle to recuperate better than twenty minutes' rest, and the power of the muscle can be increased three to seven-fold over its last effort, by this length of treatment. Dr. Graham says: "It is to be regretted that physicians do not oftener try their hands at massage themselves. They would be fully indemnified for their time and trouble. Furthermore, the benefit of their visit would be immediate, in place of mediate, as when it is the medicine prescribed and not the physician that does the work. French, German and Scandinavian physicians often apply massage themselves, without any thought of compromising their dignity. Non-medical people may become expert and skillful in the individual maneuvers embraced under massage, but they ought to have their efforts directed by a physician."

Massage should be measured as medicines are dosed, according to the age, capacity and ability of patient to react to the same. One can easily overtrear, and cause fatigue, or treat unsuitable cases and do much damage. This has frequently been done, thus causing this most valuable therapeutic agency to be discredited and brought into disrepute.

The gynecologist finds a place for local massage as a valuable adjunct in the management of subinvolution, chronic metritis, retroflexion and other displacements due to adhesions, the sequelæ of previous inflammations of the uterus, its adenexa and surrounding tissue, gluing the organs together, retarding their mobility, and thus misplacing them; also in ovarian enlargement, when not of a cystic nature or not associated with tubal suppuration. While the general treatment may be

left to the nurse, manual treatment, as applied to special organs, should be applied only by the physician.

An Extended Field of Usefulness

Massage is a general tonic and reconstructive, it increases metabolism in all the tissues, toxic substances are set free from elimination, It acts by deturging parts of their morbid matter which traumatism has caused in fractures and dislocations and sprains, bringing the affected parts back to their normal state. In chronic diseases demanding stimulation, percussion causes an efflux of nervous energy and blood to the part. Vessels in a state of atony are aroused and become filled with blood. Massage is one of the most efficient means of increasing the activity of the skin. Metabolism being dependent upon circulation, it is reasonable to suppose that the improved nutrition of the skin resulting from this treatment may induce so great a degree of vital energy as to enable the affected structure to successfully combat the morbid condition found in such chronic skin affections as ulcer, eczema and psoriasis.

Recent cases of sciatica and muscular rheumatism are almost invariably cured by massage, while it is about the only effectual treatment in gout. It has its uses in headache and neuralgia, and, let the hay-fever sufferer take note that in the initial stage of coryza, manipulation of the bridge and base of the nose, and along the lower cervical and upper dorsal vertebræ (that area of the spine from which the nose is enervated) will often dissipate this symptom with surprising rapidity.

By use of abdominal massage, we have a means of relieving congestion of the solar plexus, and in stimulating these great nerve centers of the abdominal sympathetic we accelerate the vital activity of all the abdominal viscera and benefit hepatic congestion, constipation and gastric atony. "We hasten portal circulation of lymph in lymph channels, absorption is stimulated, producing of gas diminished, and its expulsion encouraged."

Massage strengthens the abdominal muscles, increases intra-abdominal pressure, and thus aids in overcoming gastroptosis, enteroptosis, and other visceral prolapses.

We but mention cosmetic massage for wrinkles, pimples, facial blemishes, cicatrices and baldness.

From the foregoing are we prepared to answer the question of the place massage should occupy in modern therapy? The average practitioner of medicine, making reply to this question, is willing to assent that massage serves as a valuable *adjunct* to medicine. But, through a failure to acquaint himself with its physiological workings and effects, and to familiarize himself with the location and connection of the various reflex arcs of the body, he loses the opportunity of observing its powerful curative actions in disease.

Through painstaking investigations he will discover that massotherapy in conjunction with other well known physical methods of treatment, far from being a mere adjunct of medicine, is one of the pillars of medical science.

381 The Arcade.

HYPEREMIA IN THE TREATMENT OF IMPOTENCE.

BY SILAS T. YOUNT, M. D., CHICAGO, ILLINOIS.

(Late Professor of Nervous and Mental Diseases, Post-Graduate Medical School.)

The influence of impotence on the man unfortunate enough to suffer from this disease is very wide spread. The nervous vitality, mentality, digestion, metabolism and, in fact, almost every normal function of the body is directly or indirectly affected.

Drugs Useless in These Cases.

The pernicious and altogether useless practice of administering a class of drugs given the deceiving title of aphrodisiacs has done much to bring the treatment of this condition into disrepute. All too often the sufferer falls into the hands of unscrupulous men and is mulcted of his means with little or nothing given in return.

The physical methods of treatment are of unquestionable value in the treatment of impotence. Judicious hydrotherapy, the use of several forms of electricity, massage and diet all may be used with evident advantage. There is one form of non-medicinal therapy, however, which seems most rational on the face of it. I refer to Hyperemia or the mechanical increase of the amount of blood in the part.

I have had a rather extended experience in treating this class of cases with an appliance which has been called the Erectruss. Since 1907 I have used this method in the treatment of 95 cases of impotence. These cases I have divided into three classes according to the conditions present. Class A: Those completely impotent for at least one and up to ten years, the ages ranging from 56 to 75 years. These constituted 40 per cent of the whole number. Class B: Those whose powers were weakened and who were almost impotent, 35 per cent. Class C: Young and middle-aged men whose disorder was slight and usually of a purely functional character. These made up the balance, or 25 per cent.

From my case records I have compiled the following figures:

Class A. 50 per cent cured or relieved.
25 per cent benefited.
25 per cent no results.

Class B. 75 per cent cured or relieved.

15 per cent benefited.

10 per cent no results.

Class C. 90 per cent cured or relieved.

10 per cent no results.

These results were obtained by the hyperemic method alone. All aphrodisiacs, tonics, electricity or hydrotherapeutic measures were entirely eschewed. Nothing was used but hyperemia caused by the use of the Erectruss.

A number of those enumerated in Classes A and B have found that after the use of this appliance for six months or a year, they can functionate without it. In Class C a large percentage stopped the treatments because they did not require them after two or three months.

The Raison d'être of this Method.

The method under discussion relieves and cures on the now well-known principle first prominently brought forward by Professor August Bier of the University of Berlin, under the name "Stauungs-hyperämie" or damming hyperemia, best called congestion.

Willy Meyer in his book "Bier's Hyperemic Treatment" says: "To employ artificial hyperemia means to increase the quantity of blood in a given diseased part of the body." Again: "Physicians must learn to recognize in the circulatory blood, one of the most powerful factors in the human and animal system in bringing about "spontaneous cures." In another place he adds: "The blood must continue to circulate and there must never be a stasis of blood."

The practical results obtained with the hyperemic method of treatment have proved beyond a doubt the absolute correctness of the theories advanced by Professor Bier. What must be our sole aim in the treatment of impotence is to retard the return of the blood from the organ, in this way increasing the quantity of blood normally contained therein; but in no way interfering with the influx of blood from the dorsal artery and the artery of the corpus cavernosum.

Properly used this method of treatment is in my judgment absolutely correct, there being no pain, no cyanosis and no inconvenience. In place of this there is a noticeable hyperemia of the organ followed by a normal erection. This treatment is strictly based on physiologic facts and is effective, harmless and satisfactory.

1003, 100 State Street.

**Keep up with the procession.
The man who hustles today, and
quits hustling tomorrow, day
after tomorrow will not be in the
bandwagon at all.**

RUPTURE OF THE PLANTARIS TREATED BY MANUAL THERAPY.

BY E. C. THOMPSON, M. D., BOSTON, MASS.

F. S., age 54, height 6 feet, weight 225 lbs., a very muscular and well proportioned man, was playing baseball July 4th. When trying to catch a ball, he trod upon an uneven piece of ground with his right foot. He was immediately seized with a severe stinging pain in the calf of the right leg, which he afterwards described as like a blow from a stick. He found he could not stand up, nor make any use whatever of the foot.

When seen the next day the leg was found to be very much swollen from knee to ankle, and especially through the calf. About the junction of its upper and middle third a hard mass about the size of a hen's egg could be felt under the skin. The patient could not make the least attempt at flexion or extension of foot without experiencing severe pain. The diagnosis was rupture of the plantaris muscle with probably the inclusion of some fibres of the gastro-enemius, as the case seemed to be an unusually severe one for rupture of the plantaris alone.

For treatment he was given massage from the ankle to the knee, after which a firm bandage was applied from the toes to just below the knee joint.

The movements consisted of long, firm, upward strokes of the palmar surface of the hand and fingers, beginning very lightly and gradually increasing the pressure on all sides of the limb from the knee to the ankle.

Later firm upward pressure of the palm was given, beginning about three inches below the lump and continuing some distance above it.

After fifteen minutes' application the lump was considerably smaller and softer, the pain was almost gone, he could flex the foot and with little inconvenience could bear his weight on it.

This massage combined with active flexion and extension of the foot, was given daily for the next six days, at the end of which time all of the swelling had disappeared, the lump in the calf could hardly be felt, he could flex and extend the foot fully, he walked two miles and returned to his work.

Reviewing this case, it is wonderful to see what massage properly applied can do. Its administration caused no pain, but on the contrary gave the greatest feeling of relief.

In times past the patient would no doubt have been given a cooling lotion or soothing liniment and be told to rest the limb, and it would have been fully two weeks, or even more, before he would have been able to hake full use of the leg.

76 Poplar Street, Roslindale.

PRACTICAL POINTS IN HIGH FREQUENCY VACUUM TUBE TECHNIQUE.

BY NOBLE M. EBERHART, A. M., M. S., M. D.

Professor and Head of Department of Electrotherapy, Chicago College of Medicine and Surgery;
Professor of High Frequency and Vibration, Illinois School of Electro-Therapeutics, etc.

Burns From High Frequency Currents.

In my previous article I called attention to the production of burns with the high frequency vacuum tubes in contact with mucous surfaces. Another condition in which these currents must be used with care is about the neck or scalp, where there is a fine, fuzzy growth of hair, as with some forms of apparatus having considerable amperage, enough current comes through to produce a spark capable of setting fire to any inflammable substance.

This property of the high frequency spark may be easily demonstrated by lighting a gas jet with it. I have been told of one or two instances where severe burns occurred from the spreading of the tiny flame to the hair on the head.

High Frequency to Offset Tendency to X-Ray Burns.

While I am touching on the subject of burns I wish to call attention to a use I have made of the high frequency current, regarding which I have seen no reference elsewhere. This is the use of this current to offset some of the effects of the x-ray, and by its use in conjunction with the latter, to enable a larger dose of the x-ray to be administered without a corresponding degree of danger.

The ultimate action of the application of the x-ray is to cause a decreased amount of blood in the part treated through the action of the ray in increasing the cellular lining of the arterioles, and thereby producing a diminution in their caliber. It is well known that in deep x-ray burns we have a condition of starvation and death of tissue resulting from insufficient nourishment. Now, as far as the action of the high frequency current on the vessels is concerned, it is diametrically opposite. It increases the blood supply to the part treated, and to this extent it tends to offset the anemia produced by the ray. Otherwise the two methods usually act in harmony with one another in a large number of diseases, particularly those affecting the skin, and by combining the two, a greater amount of x-ray may be safely used, while its action is hastened by the complementary effect of the high frequency current.

It is my custom in treating these diseases, when it is possible to have the patient every day, to give an x-ray treatment followed by

a high frequency application every other day, with a high frequency treatment alone on the intervening days.

Suggestions Concerning Technique in Surface Lesions.

In applying the high frequency spark on the surface of the body there are certain general conditions in which it is found most useful. For instance, skin diseases, such as acne, eczema, psoriasis, etc., call for the application of a current sufficient to produce a spark $\frac{1}{2}$ to $\frac{3}{4}$ of an inch in length. With such a tube I do not try to make use of the full-length spark, but keep the tube in light contact with the skin, thus giving a sufficient intensity of current, but avoiding the pain that would be the result if the tube were held at full sparking distance from the surface. The tube is passed rapidly back and forth over the surface treated.

Where itching is marked the tube is raised from the skin and as sharp a spark applied as the patient will tolerate for a short period of time. This quickly relieves the itching and also quickly produces the physiological reaction of the current—hyperemia, etc.

In the treatment of epitheliomas, in lupus, and in chronic ulcers where the action desired is between that of mild stimulation and actual cauterization (fulguration), a spark is employed in the same manner, that is as sharp as the patient can stand, but not for a long period, say from two or three up to occasionally five minutes.

Unless cauterization is sought the tube should be kept moving rapidly over the surface, and not allowed to expend its full effect steadily over any one minute area.

A treatment of this character, prolonged ordinarily until redness of the skin is produced, is the treatment to be used for the relief of pain, such as congestive headaches, neuralgia, etc, the beneficial action of the high frequency current in these cases being largely through the result of counter-irritation. In attaining this result it makes very little difference whether a very sharp spark is used, with a rapidly moving tube, at full sparking distance, or whether, with the same intensity of current the tube is kept in contact with the skin. It depends upon the sensitiveness of the patient and also upon the location of the area treated. A long, sharp spark frequently exerts a slight cauterizing effect and the surface will be covered with tiny blebs which are followed by minute scabs which make the skin sore and uncomfortable. Unless the case to be treated is a severe one it seems scarcely permissible to push the treatment to this degree.

If the skin is moist the tube will stick to it and not slide rapidly back and forth. The use of talcum powder will obviate this or, if desired, the treatment may be applied through one or more layers of clothing.

If a sharp spark is held steadily over one spot for from two to three minutes it will have a cauterizing effect; the reaction is severe and the destruction of tissue may be carried to a marked degree. Such applications have been used successfully in the removal of warts and small growths. I have treated epitheliomas in this manner and have had them separate from the surrounding tissue and peel out as smoothly as if cut out with a die. It is too severe a measure, however, for the average case. Fulguration involves the same principle, but the spark is derived from a metal point.

Titus or Protected Tubes.

If one excites an ordinary vacuum tube, as, for instance, a rectal tube, and then surround it near its extremity, or, in short, anywhere along it, with the thumb and forefinger, it will be observed that the color in the tube does not extend beyond the point where it is encircled by the finger. Apparently all of the current is drawn off at the point of contact. I say "apparently" because a slight amount still reaches the extremity of the tube but probably 90 per cent of it disappears at the point of contact with the thumb and finger.

It is obvious then, that if such a tube were used to treat the prostate, or a disease within the rectum, the external sphincter would receive nearly all of the current and very little would reach the desired area. To overcome this, protected tubes are made in which both extremities are vacuum, the connection being through a small tube, which is surrounded by a jacket of glass with an opening to admit air. When the tube is inserted the part which is not a vacuum is in contact with the external orifice, while the extremity, which is a vacuum, delivers its full current where its effect is required.

To the best of my recollection these tubes first were suggested by Dr. Titus. I use them in nearly all orificial treatments, and there is no chance for an argument concerning their advantage over the old style tube in these cases.

(To be continued.)

**Success lies not in achieving
what you aim at, but in aiming at
what you ought to achieve.**

**A crank is one who mistakes a
little object for a great one, and
gives it the time and attention a
great one only deserves.**

**The cistern into which nothing
goes is soon pumped dry. The
life into which no good is put
never yields any good.**

NOTEWORTHY EDITORIALS.

The ever widening interest in physiologic methods of treatment frequently stimulates an especially interesting line of thought in some of our editorial confreres. Such ideas are well worthy of repetition, and we propose here, for the benefit of our readers, to inaugurate a department in which to reprint in part or in whole the best of such editorial articles as may be in harmony with the scope of this journal.

THE TRUE PHYSICIAN VERSUS THE FAKIR.

Fresh air is a good thing, a necessary thing. It will prevent many and will cure some diseases. But he who bombastically talks of fresh air as the only great remedy, the only panacea against all human ill, is a fakir.

People who always live in fresh air are also sick and we have seen Swiss guides—men who always breathe the purest and richest air—die with tuberculosis.

Exercise is a good thing. It will prevent some diseases and it will also cure some (though very few). But he who claims that exercise is a panacea against all human ills and is in itself superior to all methods of treatment, is a fakir.

Athletes, as a rule, do not enjoy very long life. Many diseases are undoubtedly aggravated by exercise, and people can be perfectly healthy without any artificial exercise. This may seem heretical, but it is so.

Diet, a moderate, varied, well-proportioned diet, is a good thing. It will prevent and it will cure some diseases. But he who claims that improper diet is the cause of all our ills and that by regulating the diet he can cure all diseases, including nephritis, cancer, etc., is a fakir.

The human organism is a remarkably adapted piece of machinery, and we believe that normal persons will do best to trust their appetites in the matter of diet. Measuring your food by calories and percentages of proteid, carbo-hydrate, fat, etc., is in the case of healthy people, unwise. Some of the worst dried up dyspeptics are to be found among the rule-of-thumb dietarians.—Editorial in *Critic and Guide*, August, 1910.

THE RELIABILITY OF MANUFACTURERS.

In all walks of life we must depend upon the honesty and integrity of those we come in contact with. Nowhere is this truer than in the purchase of apparatus, particularly electrical apparatus. The physician is entirely at the mercy of the manufacturer. He can not look inside of the case and know what materials have been employed in its construction. He can only take the dealer's word for it. Worthless apparatus enclosed in a handsome and attractive case will often sell more readily than honest goods, especially if the price is noticeably lower than the established rate.

However, we must consider carefully the reputation and integrity of the maker more than the price or appearance of the machine.

If a manufacturer is known to turn out reliable goods and to make them right if any defect should by chance occur, then he should have the patronage of the physician.

If, on the other hand, his reputation is that of being tricky and availing himself of trivial excuses for not carrying out his promise or guaranties on goods, then the less the profession has to do with him the better.

As stated heretofore, if the physician had a more thorough knowledge of electricity before purchasing apparatus he could not be fooled as readily as otherwise, but even granting him the necessary knowledge he can not go into the vitals of the apparatus and know the quality of material employed, hence it is first and last the question of the manufacturer's honesty, integrity and reliability.—Editorial in *Medical Brief*, August, 1910.

VACCINE THERAPY.

Most American, and many other physicians, are not in complete agreement with Sir A. E. Wright in the statement that the physician of the future will be the immunisator, but most will agree that he has stimulated a healthy and beneficial interest in a valuable phase of medical practice. While much has already been accomplished, especially in the subacute and chronic infections, there still remain enough obscure problems in opsonic treatment and vaccines to cause considerable scientific skepticism as to the general application of the principles laid down by Wright. The use of vaccines in the acute fevers has not proved of sufficient value to make any conclusions justifiable, possibly because the underlying immunity conditions are not well enough understood.

Vaccines have been used both for cure, and as the word originally signified, for prophylaxis. Their prophylactic value in cholera and plague is well known, and the results obtained by the Japanese army from protective vaccination for bacillary dysentery are reported to be excellent. The English army used a vaccine against typhoid fever during the Boer war, the results of which were good, but beyond these reports no great study has been made in acute diseases in men. Camp life has always been the joy of the typhoid bacillus, hence Russell's account of the use of the injections of dead typhoid bacilli as a preventive of typhoid fever in the United States army deserves attention. The results seem to indicate two main points of importance, namely that the injections are harmless at all times, even when the patient has been exposed to the disease and should show the theoretic negative phase; and, secondly, that there was less typhoid among the injected men than among those not so treated. Certainly his results justify as thorough a test of this method as is possible; for the importance of prophylaxis against typhoid fever during war need not be further emphasized than by reference to past experiences which proved to our regret that oftentimes the bacillus was mightier than the bullet.—Editorial in the *Interstate Medical Journal*, June, 1910.

MORE ATTENTION TO DIETETICS IN MEDICAL COURSES

Although proper eating is the keystone to health, medical schools neglect dietetics entirely, or, at any event, teach but meagerly its fundamentals. There is, however, an awakening interest to the import

of scientific feeding in health, and especially in disease, and the time is fast approaching when every medical institution will devote a reasonable length of time to this department of medicine. Think of the absurdity of turning loose on the public medical graduates without a single lecture on this important subject, and yet this is exactly what most of the medical colleges are doing. Amongst the first questions directed to a recent graduate is that of the quantity and quality of food to be administered. Isn't it just as unreasonable to expect an embryo doctor to handle this question intelligently as to administer drugs rationally without ever having had a lecture or demonstration in materia medica or therapeutics? It goes without saying that a sick person demands proper diet, else recovery will be delayed, and in some instances even prevented. That improper dieting is at the bottom of a great many ills is a certainty, yet the interrelation between diet and disease and disease and diet have received but scant attention of our medical educators. Of what use is the qualitative examination of urine, if you do not know what food and what amount the patient is consuming? In diabetics it is now well understood that the fact that the tissues in some instances can and do oxidize a certain amount of the ingested carbohydrate diet, shows a tolerance for a given quantity of sugars. This being the case, it is the utmost foolishness to deny to the sufferer the amount of sugar for which he shows a tolerance. Still, how often have we heard of diabetics just because a little sugar is found in the urine to be placed on a sugar-free diet, which is an absolute punishment and injustice to the patient.

In many other conditions the above statement is just as pertinent, and it seems no more than justice to the student that he receive proper instruction in dietetics, which can only be accomplished by establishing chairs on dietetics in charge of dieteticians.—Editorial in the *Maryland Medical Journal*, June, 1910.

ANOTHER X-RAY MARTYR; ANOTHER WARNING.

The recent death of Dr. Mihran K. Kassabian, of Philadelphia, adds another to the list of martyrs among those who developed the art of radiography. And if to the fatalities we append a record of those *x*-ray operators and patients who are the victims of sterility, skin-cancer, intractable ulcers and chronic dermatitis, the toll of the Röntgen ray will appear a heavy one indeed.

It is safe to say that nearly all, if not all, of those who devoted themselves to radiography during its first decade (that is, up to the time of the discovery of the effects of the rays upon the ovary and testicle, in 1905), have suffered, most of them permanently, from ill-effect. During that same period, too, there was a large number of serious *x*-ray burns among patients.

The younger generation of radiographers and (*x*-) radiotheraputists protect themselves from the emanations from the tube, and with modern apparatus the exposures for skiagraphy are timed in seconds instead of in minutes. We shall probably not see a case of "*x*-ray cancer" or of sterility among those who have entered this specialty since 1905, nor a severe *x*-ray burn among patients they skiagraph.

While suitable protection and potent apparatus are now generally employed by specialists there are many surgeons, and physicians, who use an *x*-ray machine, usually a small one, in their office with no form of protection whatever. Occasional and hasty examinations, as of fractured extremities, entail little danger to the examiner and still less to the patient. Probably most surgeons who thus employ their apparatus unprotected limit themselves to such examinations; but there are some who, with no protection whatever, use the *x*-ray repeatedly in their consulting rooms for examinations or for therapeutic application. For them let the warning be uttered again that unprotected fluoroscopy is especially disastrous to the operator, and that a physician who today provokes an *x*-ray burn from skiagraphy, or on a portion of the body not purposely subjected to the therapeutic action of the rays, will find it difficult to establish in court that he used "reasonable diligence, skill and care."—Editorial in *American Journal of Surgery* (August, 1910).

MECHANICO-THERAPY.

For about twenty years there has been a branch of therapeutics in Germany known as mechanico-therapy, and in the twenty years of its existence there mechanico-therapy has established its right to a definite place in the physicians' "line of defense." The phrase "line of defense" is chosen aptly, for our medicine of today is like an army divided up into its component parts for battle. Preventive medicine is that part of the army that by reason of its strength and invulnerable position prevents the enemy from attacking. It practically is the "flying squadron" which routs the enemy before it can attack in force. Symptomatic medication is like the skirmishers and advance guard of the army whose duty it is to worry and weary the enemy as much as they can, sometimes winning out through the exhaustion of the foe. Specific medication is like the main body of a well-equipped, well-drilled and tried army, sweeping on to victory, sure in its ultimate success over the enemy by reason of its past victories over the same foe under the same conditions, and in the knowledge of its own power. Mechanico-therapy belongs in the next and last line, which of the army would be the reserve and final line of defense. It is here that those who have suffered in the battles are looked after and made ready for future frays. After severe illness of various kinds, surgical conditions or medical cases as they may be, it is on this line that the physician finds himself with his patient. The latter's life has been saved but at some cost and reparative measures are in order. Mechanico-therapy is one of the reparative measures suitable for use in certain cases, but in certain selective cases only. It being no cure-all it will not take the place of any necessary internal medication and oft-times is best used in conjunction with drugs of various kinds, particularly tonic preparations, for the reason that patients requiring mechanico-therapy usually can also take with advantage to themselves this class of drugs anyway, even if no others are indicated. Many therapeutic measures, such as massage, etc., come under the head of mechanico-therapy, but what is principally referred to in this editorial are machines on the Zander order. Machines constructed to give either active or passive motion as the particular case demands, to stiffened

joints, contracted joints, or combinations of the two conditions, where the ankylosis is not entirely bony. Machines have been constructed which will painlessly handle from the smallest to the largest joint, gradually breaking up the existing ankylosis or gradually stretching the contracture until the joint is restored to its normal condition. Contractures and distortions due to simple muscular action are also successfully overcome, and what would be otherwise hopelessly crippled human beings are by this means of therapy restored to health and usefulness. In paralysis, temporary or permanent, according to the cause, the parts and muscles affected are kept in good condition by the use of these machines. Also contractures which would come from the unaffected muscles pulling against the paralyzed ones are prevented by the keeping up of the tone of the affected muscles by the use of these machines. The Massachusetts General Hospital was the first institution in the United States to put these therapeutic agents to use, but it no longer is the only one, as several hospitals in New York now have them in actual operation and several more are adding them to their therapeutic outfits. It is interesting to note that it was a German institution, the German Hospital, to be the first to have these machines in New York. It is also interesting to note that mechanico-therapy is part of the therapeutics taught at the College of Physicians and Surgeons in New York City. The machines used for teaching purposes in this college are installed in the Vanderbilt Clinic which is connected with the college. Another interesting item is the fact that many physicians and surgeons doing certain special lines of work have already installed several of the various machines in their offices for the use of their patients. Mechanico-therapy has come to stay. It has a definite place among our therapeutic agents and a very important place at that.—Editorial in *Charlotte Medical Journal* (June, 1910).

Olive Oil to Combat Nausea and Vomiting Following Ether Anesthesia.—Arguing from the fact that substances such as fats, which are soluble in ether, are able to restore to the blood certain properties, such as phagocytosis, more or less affected by the anesthetic, the idea occurred to Graham, of Chicago, that possibly other effects, such as the nausea and vomiting following ether administration, might also be beneficially influenced in the same way. The results of his treatment on these lines in 30 cases confirm this hypothesis.

As soon as the patient commenced to recover consciousness from the anesthetic, olive oil was given in doses of 30 Gm., and in most cases the usual nausea following etherization did not occur. In other cases in which nausea was already present before the administration of oil the treatment brought about an immediate cessation of the nausea. Only in one case the oil failed to be entirely efficacious. The nausea and vomiting ceased for a while after a dose of oil, but recommenced ten hours later. Discrimination must, of course, be exercised to ascertain that the nausea and vomiting are of anesthetic origin, and not due to some other cause, such as peritonitis, microbic intoxication, and the like. Furthermore, only pure olive oil should be used, free from any fatty acids, such as may result from exposure to the air or from sterilization.—*The Hospital*.

ABSTRACTS AND TRANSLATIONS

HYDROTHERAPY.

Colon irrigation, after the method of gastric lavage, is sometimes effectual when the most actively compounded enemata are not.—*American Journal of Surgery*.

The Cold Water Bed in Fevers.—Phillips believes that the water-bed should be more often used. Water beds are a mild but effective method of applying the cold-water cure to cases of fever. By running cold water through the bed continuously the temperature of the patient lying on it may be to some extent controlled.—*The Medical Times*, London, April, 9, 1910.

Douche-Massage in Brain and Spinal Cord Disease.—Schuster advises the application of massage with one hand while the other plays a douche on the patient. This method of applying the thermal waters of Aix la Chapelle has been found to be especially useful in chronic myelitis, tabes and cerebral syphilis, spinal and progressive paralysis as well as in rheumatism and neurasthenia. With only two exceptions all the patients were benefited.—*Medizinische Klinik*, May 15, 1910.

Technique of the Brand Bath.—In the course of his paper on "Hydrotherapy in Acute Diseases," S. Baruch makes the following statement, which will probably modify the ideas of many regarding the technique of this important procedure. He writes:

"The technique as I obtained it from Brand himself is as follows: When the axillary temperature taken for ten minutes with a closely held thermometer registers 39.5° C. (103° F.), (the rectal temperature is more reliable and I use lately 103° F. as a guide) the patient is lifted into a tub two-thirds full of water not below 18° C. (64.4° F.) nor above 20° C. (70° F.) in which he is rubbed gently for fifteen minutes. During the intervals a compress of three folds of old linen wrung out of water at 60° F. and covered with thin flannel is placed over the abdomen and held firmly in place by a thin flannel band covering it completely. This is renewed every hour if warm. The bath is repeated every four hours when the rectal temperature is 103° or over."—*Illinois Medical Journal*, August, 1910.

The Advantages of the O Bath.—Professor Max Michaelis of Berlin concludes a paper entitled, "The Etiology and Therapy of Angina Pectoris Vera," as follows:

"The tendency nowadays is more and more to use the oxygen bath in place of the artificial carbonated baths. With the latter it cannot be avoided that the patients inhale the gas, and as a result, often suffer from headaches, vertigo, palpitation and other difficulties. In contrast to this, the oxygen bath not only induces peripheral stimulation, but at the same time gives the patient the benefit of an oxygen inhalation. Moreover, the exceedingly favorable, more especially sedative effects of the O baths are highly praised in all quarters.—*Therapie der Gegenwart*, December, 1909.

Baths During Menstruation.—Both physicians and patients are apt to look upon baths at the time of the menstrual period as being dangerous. The cold bath will sometimes temporarily suppress the menses, especially if the patient is feeble, or in poor health, but baths at the temperature of the body, or even warm baths with healthy patients, can be taken freely without fear. Very hot baths taken when the patient is suffering from too free menstruation, or when there is metrorrhagia should be avoided as they may produce relaxation which will increase the condition.—*Ellingwood's Therapist*, June, 1910.

Hydrotherapy in Acute Diseases.—S. Baruch, in an excellent paper read by invitation before the Chicago Medical Society, emphasized several important points: "The condemnation of the Brand bath is proved unjust by the only crucial test—the bedside." This important hydiatic procedure has seemingly fallen into disrepute owing to the faulty technique so often employed. Baruch rightly adds:

"I would not criticize those who see fit to deviate from this technique (printed elsewhere). Each physician must use his own judgment, but I do emphatically deny the fairness of judging the Brand method by any other standard than this technique and I demand in justice to the deceased author of this great life-saving procedure, that statistics be given to prove the fallacy of his deductions. Such statistics have not yet come within my observation. Ex cathedra statements without bedside proof do not justify the abandonment of a measure which has been demonstrated as valuable in a record of cases of patients of the same age, sex and occupation, under the same environment during a period of forty-three years; a veritable therapeutic control experiment the like of which is not found in medicine."

The author gives the details of a less heroic procedure which he recommends:

"When a rectal temperature of 103 F. or over without definite diagnosis is present, the patient is placed in a small rocking chair wrapped in a blanket and linen or soft cotton sheet, slid into the bath room, undressed and bathed with friction in water at 90°F. for ten minutes. He is dried with the sheet, put to bed and his temperature is taken in half an hour. Three and a half hours later if his temperature has not fallen, he is again bathed with friction in water at 85°F. The bath is repeated every four hours (or later if temperature in rectum indicates) in water five degrees lower each time until 70°F. are reached. If one of these baths has reduced the rectal temperature (not the mouth or axilla temperature) two degrees or more, the diagnosis of typhoid fever may be doubted; the larger the reduction of temperature in this early stage the more negative is the diagnosis, the smaller the reduction the more positive it is. When the diagnosis is established the friction bath at 70°F. is continued every four hours during the entire case. In most acute diseases a compress at 60°F. is placed on the abdomen and renewed every hour and at least two ounces of water at 40°F. are administered (and to be noted on the record) every two hours. The patient is not disturbed if he is sleeping normally."—*Illinois Medical Journal*, August, 1910.

ELECTROTHERAPY.

Zinc Ions in Carbuncle.—The following method was successfully employed by Leduc in the treatment of painful carbuncle of the neck. The negative pole was applied to the calf by means of several thicknesses of absorbent material, saturated in warm salt water, and rolled round the leg. The carbuncle was punctured at its base by means of a tenotome, and a zinc needle, connected with the positive pole, introduced into the puncture. The current was then passed for half an hour, during which time its intensity was gradually increased to 30 milliamperes. Pain began immediately to diminish, and disappeared, together with the inflammation, on the following day. Similar treatment proved efficacious in cases of boils on the neck, a compress of zinc sulphate solution (one-half per cent) being used instead of the zinc needle.—*Archives d'électricité médicale*, February, 1910.

Electrolytic Cure of Recurring Cancer.—Kafemann reports a case of epithelial carcinoma in the nasopharynx of a policeman about thirty-eight years old. The cancer was removed with apparent success but three months later there was a stormy recurrence with numerous metastases in adjoining glands on both sides of the neck. After curetting the growth, it was given electrolytic treatment and rapidly retrogressed under 13 exposures; there has been no trace of recurrence during the 2 years since. He applied a current of about 22 milliamperes for 10 or 15 minutes at a time, the sittings at intervals in the course of 6 months. A suspicious bunch was curetted away twice during the course of electrolytic treatment and the glands in the neck were operated on a month before the last exposure.—*Deut. med. Wochenschrift*, June 30, 1910.

The Value of Fulguration in Gynecology.—Richter reports his results in using the Keating-Hart method of fulguration in 45 cases of pelvic cancer. Twenty-eight cases were treated once, 11 were treated twice, 3 were treated three times, and 3 four times. The first cases were treated under chloroform narcosis, later with lumbar anesthesia, and finally without anesthetics. The immediate effect of the fulguration was relief of the pain, explained by loss of blood and reduced pressure, control of hemorrhage, from the hemostyptic action of the spark, and cessation of suppuration. The final results of the experiments warranted the following conclusions: (1) From fulguration one cannot hope for lasting benefit, but the palliative effects are excellent. (2) As the spark may be used in breaking down cancer of the uterus without an anesthetic, the method is an improvement over cauterization. (3) The fulguration relieves the pain for a considerable time, stops the hemorrhage and prevents the discharge. For these purposes it is best to combine it with the acetone treatment.—*Münch. med. Wochenschr.*, April 26, 1910.

The Treatment of Prostatic Disease with Electricity.—Walton points out that, according to Snow, this current acts as follows: (1) The actinic effect is due to the ozone and nitrous acid evolved at the site of contact of the electrode with the tissues—products of decomposition. (2) The phoretic action of the current whereby these and other medicinal substances are conveyed into the tissues. (3) The

effect of the current in inducing local hyperæmia, thereby bringing into the tissues involved an increased quantity of arterial blood with an increase of phagocytosis; and (4) the electric action of relatively large ampère currents which may have some action in bringing about the pronounced effects associated with the relief of localized infection. As the majority of men and boys have or have had gonorrhœa, and as statistics state that 70 per cent of the laparotomies in women are caused by specific infection, and as this disease is considered by many men of no more gravity than a bad cold, no serious importance being attached to it, the case is sadly neglected, becomes latent and is probably never cured; the victims become disseminators of infection and add their quota to the great social evil.—*Charlotte Medical Journal*.

Vibration in the Treatment of Constipation.—Mary L. H. Arnold Snow, of New York, advocates the use of mechanical vibration for the cure of constipation and of pelvic troubles. It has mechanical, chemical, physical, and reflex effects. It induces removal of extravasations, lymph exudations and transudations, and prevents the formation of adhesions, while it breaks up those that have formed. It should possess the necessary rapidity and length of stroke, and exerted pressure should be painless. These factors should be governed by the patient's resistance and the indications. Interruptions should be limited in number and avoid nerve exhaustion. Intervals of rest should be longer than those of percussion. The author goes on to describe the technique of vibration as applied for constipation. It may be combined with rectal injections of water or oil. Contraindications are cancer, ulcer and a tendency to hemorrhage. Vibration is useful for the liver, abdomen, and in case of colitis. It is contraindicated in pyosalpinx and pelvic abscess, but is useful in the treatment of amenorrhea, dysmenorrhea, exudates, endometritis metritis, oophoritis, rectal prolapse, etc.—*Medical Record*.

Electrical Treatment of Gonorrhœal Epididymitis.—Ladislaus Austerveil recommends the electrical treatment of acute gonorrhœal epididymitis. The electrical treatment of this condition was tried as long ago as 1869, and with good results, but it has since fallen into disuse, and is not mentioned even in the best books on physical therapy. On theoretical grounds treatment by the galvanic current would appear likely to do good because of its pain relieving and antiphlogistic action, and also because by its action in strengthening the blood and lymph circulation it tends to promote absorption of subacute and chronic exudates. Remak, in his latest work, recommends the use of a weak galvanic current for gonorrhœal epididymitis, while Mathieu, Dehlerum, and P. Lazarus mentions that good results have been obtained from a strong current of 20 to 60 milliamperes applied for from one to two hours. Six cases are given to illustrate the effect of treatment. These cases confirm the results of Winkler and Becker, in that the condition improved in a few days; the inflammatory exudation, if it did not altogether disappear in the time, yet ceased to advance, the pain disappeared, and the patient was not obliged to remain in bed for a fortnight, but could return to work within a few days; the whole process healed in from five to eight days, but the exudate was not fully absorbed for five or six days longer. The

method is very simple; any small portable apparatus can be used, because any apparatus will give a current of 0.2 to 0.4 or 0.5 milliamperes.—*British Medical Journal*, May 28, 1910.

RADIOTHERAPY.

Influence of the X-Ray on Cells.—In an interesting and ultra-scientific paper entitled, "Experimental Studies Concerning the Action of Smaller and Larger Quantities of the X-Ray Upon Young Cells," H. E. Schmidt tells of experiments which go to prove that in small doses the x-rays stimulate cell activity, while in larger ones they exert an inhibitive action.—*Berliner klinische Wochenschrift*, May 23, 1910.

Influence of the X-Ray on Menstruation—Frankel has observed eighty cases in which menstruation has been more or less influenced by x-ray therapy. The early cases were those under treatment for other than pelvic conditions, and in many cases the pelvis received no direct exposure. Nevertheless, menstrual changes, such as delayed and scant periods, were noted. This fact speaks for an elective action on the ovary, or a special susceptibility of the ovary to the x-ray.—*American Quarterly of Roentgenology*.

The X-Ray in Gynecology.—Griscom and Pfahler report results with Röntgen therapy in gynecology. They find that the x-ray can decrease or obliterate the functions of the ovaries and that it can control menorrhagia and metrorrhagia due to myomata; it can also control other menstrual disorders due to over activity or increased irritability of the nervous mechanism connected with the ovaries. X-ray treatment should be confined at present to inoperable fibromata and menstrual disorders in which other forms of treatment are not advisable.—*New York Medical Journal*, June 25, 1910.

Short Exposures in Roentgen-Therapy.—With Burger's bulb, Dr. H. E. Schmidt obtained the erythema dose with 1.8m. in sixty seconds, using No. 7 rays, with a distance of 12 centimetres and a parallel spark-gap of 8 centimetres. The erythema dose was measured by means of a Sabouraud disc at a distance of 6 centimetres. The therapeutic Central tube, made by Burger, in which the glass at the exit of the x-rays is blown especially thin. Besides this, the anticathode is but half the usual distance from the glass wall. A somewhat similar therapeutic tube is made by Grisson. It is evident that the thickness of the glass must be taken into account in all therapeutic work. With glass bulbs of different thickness we are employing totally different therapeutic agents.—*Arch. Roentgen Ray*, London, April, 1910.

Treatment of Tubercular Peritonitis by Means of X-Rays.—Alaria and Rovere report seven cases of tubercular peritonitis treated by means of X-rays. They claim one undoubted cure out of the seven cases. In one case there was a bad result on account of the generalization of the disease. In other cases there were no bad results if no good was accomplished. It was noticed that the treatment caused a slight and inconstant increase in leucocytosis. They think great care should be exercised in this method of treatment of tubercular peritonitis since its effects are so uncertain. They consider it in some cases positively cura-

tive not by destroying the bacilli, but by its stimulation of the peritoneal cells. In the aseptic form they think it of use if used moderately with care, being stopped on the first symptoms of danger.—*Arch. d'élec. Médicale*.

Action of X-Rays on Metabolism and Chronic Eye Diseases.—Finley R. Cook, of New York, finds that the ophthalmic application of intermittent x-rays fails on account of faulty technique or local hyperstimulation. When properly applied it increases vision, causes absorption of exudates and in other ways improves the eye condition. A readjustment of the general circulation and changes in metabolism is caused by the peculiar qualities of radiant energy acting on metabolism. In seeking for unbalanced metabolic conditions in chronic ocular conditions the author has found two types, persistent high and persistent low blood pressure. One type is obese, mentally slow, with retarded reflexes; the other spare, with exaggerated reflexes, and hypercerebration. In extreme types we get a contracted thorax and relaxed abdomen, with intestinal disturbance and toxemia. There is a condition of lowered general vitality and submetabolism, or of hypermetabolism. The author gives histories of fourteen cases of various chronic ocular troubles which were benefited by intermittent administration of x-rays; the general action of the rays is to increase capillary circulation, muscular development, and the output of urea, phosphates, and chlorides, to promote glandular activity, increase red blood cells, and act as a tonic to the nervous system. Local inflammatory conditions are increased, edemas absorbed, exudations disappear, sclerosed arteries softened, and catarrhal secretion is lessened.—*Medical Record*, May 7, 1910.

Use of the Roentgen-Ray Without Dermatitis.—In discussing this subject, Dr. A. C. Geyser, New York, says that the cathode stream is a compound radiation consisting of alpha, beta, and gamma rays. Each one of these rays has certain properties of its own; especially do they differ as to their penetrative power. The emanations from radium are identical with those of the cathode stream. When irradiated, the cells of the tissue suffer cleavage or splitting up, the nucleus being first affected, and the protoplasm and connective tissue last and least. Roentgen-dermatitis is, therefore, not only unnecessary, but absolutely contraindicated in therapeutics. The best means of preventing dermatitis is to avoid the absorption of any rays whatever by the integument. This may best be accomplished by employing a suitable tube with a flat crown-glass window, all the rest of the tube being made of lead glass. This crown-glass window is brought into direct contact with the lesion to be treated. By this method even the softest rays pass completely through the skin without absorption, and do their work on the deeper tissue.—*Arch. Roentgen Ray*, London, April, 1910.

The Action of Roentgen Rays on Tumors.—Werner and Caan, in a lengthy communication, relate experiences with the x-ray treatment of tumors at the Heidelberg Institute for Cancer Research in charge of Czerny. A favorable influence from the rays was undeniable but it is doubtful if they will ever prove reliable alone. The method fails sometimes in the apparently most propitious cases while in others, apparently the least encouraging, surprising benefit may be realized.

Operable tumors should always be removed but in the after-treatment the Roentgen rays may be usefully applied combined with fulguration, thermopenetration or other measures. When applied to an open wound, the Roentgen rays seem to act more effectually than when they have to pass through the skin. When an operation is impossible the Roentgen rays should be applied as vigorously as possible, but not if there is a chance for operative measures later as over-exposures might have an injurious influence on the healing of the wound. This applies also to cancers on the limit of operability; preliminary Roentgen exposures may render them more movable and facilitate their removal, but in such cases Czerny is always careful not to expose the region enough to induce much eczema. In the absolutely inoperable cases Roentgen treatment should be given a trial in every case, as favorable surprises are always possible. But if only an aggravation follows the first set of exposures (5 or 6 H units over every point of the surface), it is useless to continue the exposures, as when this was observed further exposures had no favorable influence in such cases. Especially unfavorable experiences in this direction were encountered with carcinomata of the mouth, tongue and parotid region. Apparent success at first does not always mean a definite cure. After surprising retrogression of certain sarcomatous tumors at first, they then entered a phase in which they ceased to be influenced by further exposures.

The aim in Roentgen treatment is not to induce necrosis of the cancer but merely an elective injurious influence on the pathologic cells, destroying their vitality and leaving them in a form permitting their absorption, while at the same time the rays have a stimulating action on the neighboring tissues, starting proliferation in them. Unless the adjacent tissues are able to absorb the destroyed tumor cells, their destruction does no good. One great difficulty with the Roentgen treatment of cancer is that the different elements of the lesion possess a varying susceptibility to the rays. Homogeneous radiosensibility of the cancer, surpassing that of adjoining tissues, is the *sine qua non* of success.—*Munch. med. Wochenschr.*, June 21, 28 and July 5, 1910.

The X-Ray Treatment of Graves' Disease.—Schwarz, of Vienna, claims that radio-therapeutic treatment of Graves' disease gives as high a percentage of success as the surgical method, and has none of the danger and pain incident to the latter. He insists, moreover, that x-rays in exophthalmic goitre have a distinct etiological basis, one of their general properties being their power to diminish glandular secretions. Soon after the irradiation of the thyroid a modification of the nervous symptoms is generally observed, and this is frequently followed by a sudden change in the general nutrition. In some cases the patient puts on weight very rapidly; a gain of 13 to 17 pounds in a month is quite common. Within a short time there is often also a diminution of the exophthalmos, although this is a most persistent symptom, especially in cases of long standing. Out of 40 cases under the author's observation, after radiotherapeutic treatment had been applied for a mean period of three months, there was increase of weight in 26; diminution of the pulse-rate in 36; amelioration of the

nervous symptoms in every case; of the exophthalmos in 15; of the goitre in 8. The improvement is constant for the nervous symptoms, and almost constant for the tachycardia, and on this latter point Kraus is quoted as saying that when the tachycardia has disappeared for a certain time, one may consider Graves' disease as cured, although other symptoms may continue. On these grounds the author claims 90 per cent of successes for radiotherapy, which is at least equal to the percentage of operative successes. As to technique, he points out that the skin of the cervical region is normally more sensitive than that of other regions of the body, and that this sensibility is further increased in sufferers from Graves' disease. Therefore too strong doses must not be given. He irradiates the neck, first in the anterior direction, then in the left and right lateral directions, with rays filtered through a piece of glass of 2 mm. thickness. The dose is $\frac{1}{2}$ Sabouraud, or 2 kalons of the Schwarz Fallungs-radiometer, applied at intervals of three weeks; that is to say, first week, neck, anterior direction, $\frac{1}{2}$ Sabouraud; the following week, right lateral direction, $\frac{1}{2}$ Sabouraud; a week later, left lateral direction, $\frac{1}{2}$ Sabouraud; and recommencing eight days later with the same dose in the anterior direction. This cycle of irradiations must be followed uninterruptedly, frequently for six months.—*Arch. d'électricité médicale*, April 10, 1910.

VACCINE THERAPY.

The Theory and Value of Tuberculins—Edward von Adelung gives the following resumé as seeming to him to fairly present the consensus of opinion of experienced bacteriologists and practitioners on the subject: 1. Tuberculin acts by stimulating the body cells to perform their immunizing functions. 2. The essential constituents of tuberculin are not defined, but include the proteid-nuclein of the tubercle bacillus. 3. All tuberculins produce the characteristic reaction. 4. Bouillon filtré is one of the safest tuberculins for beginners. 5. Of the diagnostic tests, Koch's subcutaneous test is by far the most reliable. Its use, however, is not free from danger. 6. The conjunctival test is too dangerous for general use, although fairly reliable to indicate a present or past infection. 7. Therapeutically administered by experienced persons, tuberculin is a valuable adjunct to the treatment of tuberculosis. Under proper supervision it is practically harmless. 8. In glandular tuberculosis tuberculin is of signal value. 9. Experience and painstaking supervision are necessary to avoid injurious effects. 10. In general, the tuberculins are of definite value in diagnosis and therapeutics.—*California State Journal of Medicine*.

The Vaccine Treatment of Acne Vulgaris.—G. T. Western defines acne vulgaris as a condition in which there is a hypersecretion of sebaceous material associated with or caused by a microbacillus, probably the Acne bacillus described by Unna, Sabouraud and Gilchrist. The staphylococcus is frequently associated with the Acne bacillus in producing the lesions characteristic of the disease.

By rubbing cultures of the Acne bacillus into the sterilized skin of susceptible individuals a pustular folliculitis is produced from which the Acne bacillus can be recultivated. The opsonic index of

acne patients is not normal and an excessive dose of acne vaccine produces a negative phase and a new crop of pustules. It is supposed that a seborrhœa caused by some functional disorder forms a favorable point of entry for the acne bacillus.

Three types of acne are mentioned—first, in which the comedo forms the chief lesion, second where induration predominates and third the pustular type. In the first type the acne bacillus is generally found to be the infecting organism, in the second type the infection is usually mixed acne bacillus and staphylococcus and in the third type the infection is most often due to the staphylococcus.

Before attempting vaccine therapy it is essential to determine the nature of the infection by the use of smears and cultures made from the lesions. Either a stock or an autogenous vaccine may be used. The author finds the stock staphylococcus vaccine satisfactory but an autogenous acne bacillus vaccine is preferable although a stock vaccine suffices in many cases.

The dose of acne bacillus vaccine is much smaller than most vaccines varying from three to fifteen million bacteria per dose administered at intervals of eight days. Local treatment should be carried out in conjunction with the vaccine treatment.—*British Journal of Dermatology*, January, 1910.

Vaccine Therapy in General Practice.—J. C. MacWalters, in an interesting paper summarizes the important points regarding this therapeutic method. He states that the subcutaneous introduction of dead bacteria into the human organism is followed by a definite succession of changes in the opsonic content of the blood if the dose is sufficiently large. There is an immediate fall in the quantity of opsonins, followed by a rise above that prior to the inoculation, then a gradual return is made to or below normal. These are the negative and positive phases and the phase of increased resistance. During the first there is a lowered resisting power to that organism, in the other two a greatly increased resisting power.

Unless the dose has been excessive the negative phase is of but short duration, followed immediately by a prolonged, well-marked rise of the index, higher than the point at which it stood prior to inoculation. These phases are shown clinically by changes both in the focus of infection and in the general condition of the patient. After a time, dependent on the size of the dose and the idiosyncrasy of the patient, this improvement wanes, and he tends to return to his original condition. Our aim should be to so arrange the sequence of doses that the patient receives another dose before his phase of increased resistance has terminated, thus obviating a negative phase low enough to cause distress. It necessarily follows that when a patient's index before treatment is low the dose should be sufficiently small to produce an almost negligible negative phase so that the reaction which brings his index up to nearly normal allows us to give him another dose, bringing his index still higher.

The author has been most successful in treating acne, boils, carbuncles, suppurating small wounds, styes, impetigo, bullous onychia, chronic ulcer of the leg, tuberculous glands, and many cases of chronic suppuration from various causes.—*The Practitioner*, London, September, 1909, p. 327.

DIETETICS.

Yeast in Constipation.—A valuable simple treatment for constipation is yeast, taken once or twice a day, depending on the number of movements of the bowels that it causes. The ordinary tin foil yeast cake works almost as well. The amount administered should be about five-eighths to three-quarters of a cubic inch dissolved in half a glass of water. This dose should be taken twice a day.—*Journal A. M. A.*, July 30, 1910.

Dietetic Suggestions in Typhoid—In the management of our typhoid patients we must not forget that orange and grape juices, together with well-strained vegetable soups, will obviate the deplorable physical state which will otherwise ensue at the close of the typhoid proper, which is, in a degree, a scorbutic condition. Another point, in connection with milk when it is used in typhoid as the main dietetic reliance, is, that it should be modified by the addition of barley water, the latter in about one-third proportion. Modification by lactic bacilli cultures has also its advocates. E. E. Cornwall, of Brooklyn, reports a phenomenally low death rate in a large series treated with ripened milk.—*Therapeutic Medicine*.

A More Liberal Diet in Typhoid Fever.—Clayton pleads for a more liberal diet in typhoid fever. His patients are far more comfortable, not having that ravenous hunger that patients have when fed entirely on liquids, are not so profoundly nervous, and are better nourished. Neither hemorrhage nor perforation is more frequent than among those kept on liquids, and delirium is less pronounced. Convalescence is more rapid, and the patients return to a good general condition and a normal physical and mental state far more rapidly. The diet should be such as to keep up the body equilibrium as much as possible; it should be easily digestible, innocuous, and palatable. The author allows soft boiled eggs, scraped meat, rice, scraped apple, custard, etc.—*Medical Record*, June 18, 1910.

Sour Milk in Constipation.—We have become used to the recommendation of soured milk or some soured milk preparation for various kinds of intestinal indigestion, but Dr. Thomas D. Luke (*Practitioner*, May, 1910, vol. lxxxiv, p. 653) recommends these preparations in the treatment of constipation. As a matter of fact, with certain kinds of diarrhea soured milk will stop the abnormal fermentation and may actually produce constipation. Dr. Luke finds that constipated patients who will take from two to four glasses a day of a curdled or soured milk will have normal movements of the bowels. Of course, this must be continued for a long number of weeks, and then the amount gradually reduced. He admits that the addition of agar agar to the diet is an improvement. It is perfectly true that constipation is very frequently due to gastric and intestinal indigestion, the latter not serious enough to cause diarrhea. In such cases soured milk, correcting fermentation, might well be of benefit. It is certainly of value when there are colon putrefactive processes.—*Journal A. M. A.*, July 30, 1910.

Diet in Epilepsy.—Much has been said concerning the influence of the diet in epilepsy. I would like an opportunity of observing the effects of starvation or long fasting on one of these cases, during the administration of some phosphorus supplying remedy, in the absence of

salt. However, I have seen thirty grain doses of the chloride of sodium advised as a controlling element in the spasms of epilepsy. Roseno advises that the diet should be very low in proteid. He gives 125 grains of bread, sixteen grams of butter, and 250 cubic centimeters of milk as rigid diet to be taken three times a day. Such as that, of course, could not be long continued, and with some patients might work harm. We have much to learn yet concerning the influence of the diet in these cases.—*Ellingwood's Therapeutist*.

Meat Diet in the Tuberculous.—F. Vandeputte says that the tuberculous subject loses in weight because of increased waste and deficient nourishment. The increased waste results from the fever, the profuse sweats, and the expectoration, as well as the inability of the digestive organs to assimilate foods. The results of a meat diet are by no means brilliant; tolerance fails before a sufficient amount has been taken to feed the body. Man is not a carnivorous animal in the normal state, and cannot become so in a pathological state. If too much protein is taken, bad digestion, flatulence, and diarrhea result, due to intoxication from poisonous materials ingested. When the meat is replaced by vegetables these symptoms abate. A mixed diet has these advantages; it keeps up good appetite; continues the normal function of the digestive tract, and facilitates assimilation. This is necessary for the cure of the individual. If the action of the liver is not good the whole organism suffers.—*Le No Medical*.

Nutrient Suppositories.—The comparative uselessness of nutritive enemata has led Boas to suggest replacing them by nutritive suppositories consisting of crystallized egg albumin, dextrin, salt and cocoa-butter. These suppositories are made two and a half inches long and half inch in diameter, they will contain a little over 46 calories. Four or five of these suppositories can readily be introduced daily, so that the patient receives some 230 calories. This, of course, does not represent a sufficient nourishment, but it is greatly superior to anything that can be obtained by means of nutritive enemata. In addition, the necessary water must be supplied by means of two saline enemata daily of a pint each. These suppositories are well tolerated and represent a distinct advance in rectal alimentation. Both crystallized egg-albumin and dextrin are readily obtainable from dealers in chemical supplies.—*Berliner klin. Wochensc*, 1910, No. 14.

Buttermilk and Infantile Scurvy.—Ortiz (*Archives de Medicine et Enfants*) states that he has used buttermilk in feeding infants for several years with very satisfactory results, and was surprised to discover a typical case of infantile scurvy in one of the infants fed on this preparation. He searched the literature and was unable to find any reported case of scurvy in an infant fed on buttermilk. Some children do very badly on buttermilk. Monti believes the excess of albumin produces an intestinal auto-intoxication. Selter attributes the bad effects as due to the butterfat, while Finkelstein believes the toxic phenomenon the result of the large amount of sugar. The author is of the opinion that the lactic acid is the offender. He then describes the cases in which buttermilk is indicated, these including such conditions as chronic gastroenteritis and dyspepsia. The buttermilk as recommended by Ortiz is prepared as follows: A litre of buttermilk is placed in an enameled casserole and a

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spoonful of flour is added. This is placed on the stove and constantly stirred until it reaches the boiling point. Three tablespoonfuls of sugar are added and the buttermilk allowed to boil for five to ten minutes. The report by him is that of a typical case of scorbutus, which developed in an infant whose mother boiled the buttermilk for half an hour instead of ten minutes as directed. Orange juice was given and the buttermilk continued and the baby made a rapid and complete recovery. The fault lay more in the prolonged sterilization of the food than in the buttermilk itself.—*Medical Times* (London), July 2, 1910.

Diet in Typhoid in Children.—Le Grand Kerr declares against a kind of starvation diet, for typhoid children stand such treatment badly. Energy and weight are rapidly lost under the best circumstances, so we must look to the diet in children even more carefully than in adults. We must not depend upon milk alone. What milk is given must be diluted somewhat with boiled water. He adds a dram of milk sugar to each ounce of milk and claims for this much nutritional value. Stress is laid upon regularity of feeding.

Figuring upon a caloric basis a child should receive in twenty-four hours, for every five pounds of its weight, the following:

Milk (treated as above)	2½ ounces.
Sugar of milk.....	2½ drams.
Egg (raw)	½ ounce.
Cereal gruels	1 ounce.

In other words, a child weighing fifty pounds would be given in twenty-four hours 25 ounces of milk, 25 drams of sugar of milk, three eggs and 10 ounces of cereal gruels.

Kerr adds to the milk various vegetable purées made from fresh vegetables which have been cleaned and cut fine and boiled with water in which they have first been covered cold. After six hours boiling the purée is strained, then reboiled for five minutes, restrained, seasoned and thickened with arrow root. To eight ounces of milk two of this stock are added. The vegetables are varied.

Water is to be used freely. After the temperature has been normal for a week give zwieback, toast or stale bread. One may return more readily than in adults to a full diet, but there is an intolerance usually to whole milk.—*Amer. Jour. of Obstetrics*.

MISCELLANEOUS.

Influence of Colored Light on Inflammation—Jezierski reports experimental research, especially on frogs and mice. The results indicate that the influence of blue light resembles that of diffuse daylight, acting mainly on the leucocytes, less on the red corpuscles and the cells of the epidermis. Red light has less action on the leucocytes, but it induces hyperemia, causing better nourishment of tissue, and by promoting the regeneration of the epidermis, protects the inflamed surface and contributes to its smooth healing free from scar formation.—*Kentucky Medical Journal*, July 15, 1910.

Thermopenetration in Gynecology.—Sellheim describes the technique and results of the application of electricity to heat the pelvis

evenly throughout. The technic for this thermopenetration, as it is called, permits the passage of the heat without injury of the parts in contact. One electrode is introduced into the vagina or rectum with the other electrode parallel on the abdomen above. By changing the position of the second electrode it is possible to send the heat through all parts of the pelvis. With a current of one ampere the region between the electrodes can be heated to a constant temperature of over 40 C. (104 F.); no by-effects were observed in any case.—*Monatschr. für Geburtsh. und Gynäkol.*, May 1910.

Radium Water Cure Promising.—In consequence of the successful results obtained from the radium treatment in Joachimsthal, Bohemia, the government has decided to build a first-class sanitarium there, equipped with sixty baths of radium water. The first authentic reports show that of 209 cases 169 were benefited greatly by the cure, while there was no change in the condition of the others. The chief improvement noticed was in rheumatism, gout, neuralgia and old exudations of various kinds. The radium did not seem to have any effect on senile weakness or radical diseases of the spine and of the hearing. Scientists are convinced that the radium cure has a great future, especially because it is easily applied, both externally and internally, with remarkably constant effect.—News item in *Chicago Daily News*, Aug. 11, 1910.

The Light Bath in Bronchial Asthma.—Hofbauer remarks that in the treatment of bronchial asthma the incandescent light bath induces active hyperemia of the skin, reducing the congestion in the bronchi, while the heat causes a reflex prolongation of the respiration. The baths should be supplemented by breathing exercises to lengthen the phase of expiration while the patient emits a musical note. Hofbauer has cured a number of patients by these breathing exercises, the cure remaining complete for over two years. By training the patients to avoid irritating the vagus with hasty breathing, the expiratory insufficiency, and thus the distress, is combated and the cause for the attack eliminated.—*Medizin. Klinik*, June 5, 1910.

The Pneumatic Cabinet in Chronic Bronchitis—Samter refers in particular to bronchitis associated with cardiac insufficiency and tabulates the effect on the blood pressure of the therapeutic application of the pneumatic cabinet. The influence of the compressed air is felt in the promotion of the respiration; the diaphragm descends deeper, the lungs expand, the walls of the bronchi spread apart and the mucus clinging to them is carried out by the more vigorous respiration. The best results were obtained with chronic bronchial catarrh without much fluid secretion. His experience has shown that even with a weak heart musculature the blood pressure does not drop in the cabinet, confirming the harmlessness of the method in uncomplicated cases of cardiac bronchitis.—*Berliner Klin. Wochenschr.*, May 30, 1910.

The Treatment in Gastropotosis.—Robert Hutchinson calls attention to the use of local heat for hyperesthesia of the stomach, in the form of poultices or fomentations and whenever there is general epigastric tenderness. Such means may be employed during the first week of the rest cure. Gastric sedatives are also of service here. The matter of artificial support is of secondary importance. Gastric sup-

porters probably do not push up displaced organs, but such support gives relief from these feelings of sinking, emptiness, and exhaustion which are among the most bitter complaints of patients, but these complaints are probably due to lessened intra-abdominal tension and a tendency to a pooling of the blood in the splanchnic area when the erect position is assumed.

The best belt is a firm abdominal wall, and our efforts should be directed toward restoring its tone and to thickening it by the deposition of a substantial layer of subcutaneous and extraperitoneal fat. As regards the development of the abdominal muscles reliance must be placed upon massage and the practice of abdominal exercises. In regard to abdominal belts, the ideal one is yet to be invented. It must cause pressure from the lower part of the abdomen upwards and somewhat backwards. In the pendulous belly of stout subjects this is quite easy, but most patients with gastroptosis are thin, with prominent iliac bones, which tend to carry off the pressure from the hypogastric region, where we most wish to apply it. The problem is a purely mechanical one, and the use of a suitable pad helps to overcome it, but the results leave much to be desired. Three things should not be done: patients with gastroptosis should not be over-dieted, their stomachs should not be washed out, and they should not be operated on.—*British Medical Journal*, May 7, 1910.

Keep your eyes open. If you do, things will come your way sooner or later. Ideas are not all "run on to" Most of them have to be dug up. Look for a good place to dig, then buy a shovel and get busy.—Backbone.

Facts are teachers. Experiences are lessons. Friends are guides. Work is a master. Love is an interpreter. Joy carries a divining rod and discovers fountains. Sorrow is an astronomer and shows us the stars.—George F. Butler.

There is only one real failure in life possible, and that is not to be true to the best you know. Your greatest glory is not in never failing, but in rising every time you fall. Kites rise against, not with the wind. No man ever worked his passage anywhere in a dead calm.—Butler.

REPRINTED ARTICLES

MECHANICAL VIBRATION IN GENERAL PRACTICE.

BY J. S. HUNT, M. D., SANTA MONICA, CAL.

The use of mechanical vibration in the field of therapeutics is a comparatively new system of treatment, but results have been so successful that its efficacy is unquestioned.

In a way it may be said to go hand in hand with the Bier treatment which is likewise commanding great interest and attention in the medical world at the present time, for both aim to produce a hyperæmic condition where abnormal conditions prevail, thus bringing an active flow of healthy blood to the parts.

Bearing this fact in mind it is reasonable to suppose that benefits may be derived in the early stage of all inflammations where the treatment can be applied.

Excellent results have been attained in various forms of nervous disorders, chiefly in insomnia, neurasthenia and paralysis. My own experience has been so gratifying in certain notable instances during the past three years that I am using the treatment more and more frequently.

The following cases are selected as illustrations for the reason that the efficacy of the treatment was, to my mind, unquestioned, inasmuch as medicinal methods had previously been tried, but abandoned when vibration was commenced.

Case 1. Mr. W., age about fifty years, suffered an attack of hemiplegia about three years ago at his home in an Eastern city. He was a man of wealth and had led the strenuous business life. Having always been well and being possessed of a fine physique, he could attribute his breakdown to no other cause than overwork. No history of specific infection. He was entirely helpless on the afflicted side. Incontinence of urine had been an obstinate and most annoying symptom. He was inclined to melancholy, very irritable and suffered greatly from insomnia. For nine months following the onset of his trouble he had been in the care of well known Eastern physicians, so it is presumed that all available treatment of a remedial nature was tried. After his arrival in California he underwent a course of several weeks' treatment with various forms of electricity with no benefit whatever. He was able to go out each day in a wheel chair, but was in constant charge of an attendant or trained nurse. Nights had become a terror to him on account of his inability to sleep. With no thought of accomplishing more than a possible relief of the insomnia and extreme nervousness I concluded to try vibration as my first effort in the patient's behalf. Application was made over the entire affected area and dorsal region. It would be interesting indeed to know just what change was wrought in the nerve centers or what impoverished part of the system received new activity from this simple method of treatment, but certain it is that some remarkable transformation took place. Upon returning next day the very gratifying report was given that the patient had slept all night. He was in excellent spirits and informed me that he had not felt so well nor had such a good night's sleep since the beginning of his illness. Applications were continued once daily with really phenomenal results. In three weeks he was able to walk alone with the aid of a cane. The

bladder was under perfect control and his mental attitude apparently perfectly normal. He left for his home soon after, and nothing was known of him until a short time ago, when I learned that he has had no return of his trouble and is in good health. The case has always been a puzzling one to me. I claim no credit whatever for the results, but consider it an example of great good fortune both from the patient's standpoint and my own. What the treatment might accomplish in other cases of similar nature time alone can tell.

Case 2. Mrs. H., age 26, has been in my professional care at occasional intervals during the past two years on account of violent attacks of headache and vomiting. Patient was of bilious temperament and had a history of years of these periodical experiences. Between the intervals of suffering her health was quite good until within the past few months, when stomach derangement and increasing frequency of headache caused continual lassitude and marked loss of flesh. Remedies were given as indicated with no decided amelioration of symptoms nor improvement in general health. Other means having proved disappointing, it was decided that vibration should be given a trial at the next ordeal. First treatment was rendered about three months ago during the height of the attack, when the headache was agonizing and nausea and vomiting most severe. A soft rubber application was used on forehead and occiput and a hard rubber circular plate applicator over the hepatic region and spine. Results in this case also were most gratifying and came with surprising suddenness. Headache and nausea were relieved at once, and the patient not only returned rapidly to normal health but thus far has escaped a return of the troublesome symptoms. Apparently this was a case as the laity would say of "stirring up the liver," and really the expression in connection with this treatment is an apt one. The portal circulation becoming accelerated, it allows the organ to resume its normal functions and overcomes the torpid condition that is frequently far-reaching in its systemic effects.

In two cases of impending paralysis with numbness in fingers and up the arm the symptoms were entirely eradicated after a few weeks' treatment. In these cases application was made not only to the affected portion, but also over the liver and up and down the spine.—Reprinted *in toto* from *The Pacific Coast Journal of Homeopathy*, June, 1910.

THE INCANDESCENT LIGHT AS A THERAPEUTIC AGENT

BY J. T. FARRELL, M. D., PROVIDENCE, R. I.

The beneficial action of light has been known from the earliest times. The old Greeks were accustomed, on the grounds both of pleasure and health, to expose themselves, after first anointing their bodies, to the sunshine on the flat roofs of their houses. Cicero tells us that the Romans after taking their baths basked in the sunlight, and followed this delightful pastime by cold sponging. In later days they had special buildings for this purpose. Herodotus made special mention of sunbaths for persons with poor or enfeebled muscles, and this method of treatment was recommended for many diseases, as dropsy, sciatica, affections of the kidneys, elephantiasis, swellings and many diseases of the skin. In the

middle ages this method of treatment passed into oblivion, and we hear nothing of systematic light treatment until the middle of the last century. From that time there has been a constant accumulation of knowledge on the subject. The investigators were numerous and were the forerunners of our present use of light for treatment.

By the physiological effects of light are usually understood, first, its physical effect on matter, on the elementary particles of which the tissues are composed. Second, its effect on the vital functions. Under the influence of light living tissues may pass from a state of passivity to one of activity, and change of form, of energy, of matter, may be induced. In this sense light works like other physiological irritants, under certain conditions awakening and strengthening elementary forms of life, under others weakening.

Some of the effects of the light on the skin are :

First.—It has an irritant effect on the skin, producing inflammation.

Second.—It promotes perspiration.

Third.—It has a direct effect on the blood and the blood vessels.

Fourth.—If large portions of the body are exposed to strong light it causes a considerable rush of blood to the surface, and thus depletion of the internal organs.

Fifth.—It modifies, directly or indirectly, the transmutation of matter.

Sixth.—It incites movements.

Seventh.—It exercises influence on the nervous system and the mind.

Eighth.—It has peristaltic power.

Ninth.—Excessive light stimulus is destructive and paralyzing.

One peculiar phenomenon which I have observed is that if a person exposed to therapeutic light does not show a tanning of the skin the light will not benefit them.

The following cases will illustrate a few of the results which I have obtained with the incandescent light, with instruments of from fifty to five hundred candle power. The higher the candle power the more marked the results. I use a fifty candle power Habbe lamp and a two hundred and fifty to five hundred candle power Leucodescent lamp.

Mrs. D., a stout, muscular woman of 52, consulted me in regard to an injury to the shoulder joint of eight weeks' standing. Examination showed the parts about the shoulder swollen and painful. Motion was very much impaired on account of its painfulness. Fracture or dislocation being excluded, she was put under the light for twenty minutes, with relief. She had four treatments at intervals of three or four days, with the result that she was free from pain and had the full use of her arm. It has remained so for three years.

Dr. G. Has had an attack of lumbago each winter for a number of years. I begged him to call and let me warm his back, which, by the way, was a big one. He was relieved from pain at the first sitting and was well after four treatments of thirty minutes each. He has had one attack since, and was relieved in two treatments.

Dr. S. Sent by the last patient for treatment for the same trouble. One treatment of twenty minutes each day for four days cured the attack. He has had one attack since and received one treatment of twenty minutes, with a request to call the next day. I did not see him for

a week, when I met him at the hospital, and asked him why he did not return for treatment. His reply was: "I did not have a pain after I left the office and I felt that I was all right."

I have had four cases of gall stones, the diagnosis of each case being confirmed by at least one surgeon, and in the case I am about to relate, by four surgeons, each advising operation. This patient was a woman 39 years old, and the mother of ten children, and at the time that I saw her first, seven and one-half months pregnant. I found her suffering great pain in the region of the gall bladder, the skin very yellow, the urine saffron color, and with all the classical symptoms of gall stones. She was suffering great pain. I gave her a hypodermic of one-half grain of morphine and advised her to be operated upon. She informed me that she had been to the hospital, but had decided not to be operated upon until after her baby was born. She herself asked for light treatment, as some of her friends had been benefited by it. I told her if she was able to come to my office she might do so the next day, October 28. She came, and was a sorry sight, bent over with the pain, which had returned, and the color of an Indian. I put her under the light for half an hour, until the pain was relieved. November 1, reported no pain since the last visit, and was hungry and wished advice as to what she might eat. Treatment was given November 4, 11, 22, and 30. There was no pain after the first treatment. Her bowels were regular and her appetite good and her skin was clearing. December 6 she sent me word that her baby had been born that morning, after an easy labor. I consider the result in this case better than I have ever had under any other method of treatment. I do not think that I dissolved those stones, but I produced results that enabled her to pass safely through one of the most critical periods in a woman's life. The other gall stone cases were nearly as remarkable.

Mr. F., referred to me by Dr. Gleason, suffering with a swelling of the leg from knee to ankle. He was very lame, and the leg was painful. He had not worked for six weeks. An X-ray picture was taken to see if the bone was involved. The picture showed the bones normal and the diagnosis was made of periostitis. He was put on the table and the light used for twenty-five minutes. The following three days it was used for one-half hour each time. He went to work on the sixth day, the swelling and pain gone, and has remained well since.

I have used the light in a few cases of chronic eczema with good results. I have also used it in acne with like results. In all cases of pustular skin diseases it will do good. Pruritus ani, as related above, and pruritus vulvae are soon benefited.

My method of applying the light is to remove all clothing about the parts affected and to concentrate the light from a distance of eighteen to twenty-four inches. If the heat is unbearable, a slight rubbing of the skin dispels the feeling of warmth. I do not think that light is a cure-all, but I believe there is much to learn, and that, as an auxiliary, we will find it of great assistance in the treatment of many diseases which now tax us to the utmost and often result in failure.—Reprinted *in toto* from the *Providence Medical Journal*, July, 1910.

A FLEXIBLE CONTACT DIAPHRAGM AND PROTECTIVE SHIELD FOR X-RAY TUBES.

BY SINCLAIR TOUSEY, AM., M. D., NEW YORK CITY.

A diaphragm or an opaque barrier of some kind with an opening of appropriate size is useful in X-ray treatment by limiting the application to the desired region, while protecting other parts of the patient and also the operator from the influence of the rays. Its value in radiography depends not only on the above factors, but also on its exclusion of vaga-



bond rays arising from various parts of the X-ray tube and blurring the clean-cut shadows which would be produced by the direct rays emanating from the focus point on the anticathode. An example of blurring, due to light radiating from a large area instead of from a single point, is seen if the fingers are held against a piece of paper a few feet from a window. The shadow seen on the further side of the paper

has a much blurred margin. The shadow of a coin held against the paper is much more sharply cut, although the finger is just as opaque to ordinary light.

There are factors operative in determining the definition in a radiograph, namely, the area from which rays originate and the distance of different parts of the patient from the surface of the photographic plate. With the plate directly in contact, the distance from different portions depends on the thickness. A good antero-posterior radiograph of pneumatic sinuses through the entire thickness of the head is an impossibility without a diaphragm.

The smaller the orifice of the diaphragm, of course, the clearer becomes the image, but the area embraced in the picture becomes correspondingly smaller.

My contact diaphragm is designed to secure the best possible definition with a wide field by having the orifice in contact with the wall of the X-ray tube. An orifice two inches in diameter, at a distance of three inches from the wall of the tube and say six inches from the focus point on the anticathode, will permit of making a radiograph only six inches in diameter on a plate eighteen inches from the anticathode.

It greatly reduces the amount of blurring as compared with that produced without a diaphragm, but still permits of some blurring. A diaphragm, in contact with the wall of the tube and with an orifice only one inch in diameter will give the same 6-inch radiograph at a distance of eighteen inches with much less blurring, because rays from a much smaller part of the X-ray tube can pass through a given part of the object and produce a shadow. A contact diaphragm of this size is correct for the radiography of the pneumatic sinuses of the face.

Sufficient definition for studying the condition of the spine or the lungs or the entire urinary tract in the search for calculi, may be obtained with a contact diaphragm whose orifice is two and one-half inches in diameter.

The flexible contact diaphragm is of flexible rubber composition containing a lead compound which is opaque to the X-ray but which is not a conductor of electricity. It is flexible enough to be changed from one tube to another but fits so closely that there is no danger of its shifting during use. It covers about $\frac{7}{8}$ of the bulb, the uncovered part being at the back and affording sufficient surface to prevent overheating. In actual use I have found that it gives the desired increase in definition without any drawbacks, such as inverse discharge or rapid hardening of the tube. Its orifice is directly in contact with the glass and can be made smaller by inserting three different rings of an opaque rigid material. For occasional use in radiography or in Roentgenotherapy, it affords all necessary protection, but for constant use, I place the tube and contact diaphragm inside the opaque box known as Ripperger's shield, and use lead-glass spectacles and opaque apron, gloves and cap. A simple expedient would consist in remaining outside the room while the X-ray was in operation.—Reprinted from the *Journal A. M. A.*, August 6, 1910.

TOXINES, SERO-THERAPY AND VACCINES.

BY JOHN J. GAYNOR, M. D., LOS ANGELES, CAL.

Specific immunity may be active or passive, acquired or developed. Active immunity may be acquired by disease, or developed by a vaccine. Passive immunity follows certain diseases, or is produced by antitoxins. Active immunity has a certain permanence: passive immunity is always fleeting. The active immunity following typhoid fever or vaccination is in marked contrast with the passive immunity following diphtheria or diphtheria antitoxin. The former is an immunity against specific bacteria and their toxins; the latter, against specific toxins only. This distinction is mentally essential, in biological therapeutics, and timely prophylaxis.

The essential difference between a culture vaccine and serum antitoxin, is usually this: A vaccine contains killed bacteria and their toxins; an antitoxin bears immunizing bodies, already elaborated, but does not carry bacteria, dead or alive. Vaccines are employed to produce prophylactic immunity or biological stimulation. Here the incentive of coming from without, accelerates immune elaboration within. Used in disease, but, more notably as prophylactives, vaccines (bacterins) stimulate the system to produce immunizing products—antitoxins, antiendotoxins, precipitins, agglutinins and opsonins. These bodies are known not by what they are, but by what they do.

Antitoxins carrying elaborated antidotes, combat toxemia. Vaccines in bacteremia increase hyperintoxication, by bacteriolysis. In acute streptococcic septicemia, for example, vaccines are practically worthless, if not absolutely injurious. Here, the blood, already overcharged with bacteria and their toxins, contains more than enough autogenous vaccines, to stimulate the formation of immunizing agents, if the system be capable of any response.

The rule of vaccine dosage is: Sufficient for specific action, but

not enough for toxic effect. The minuteness and infrequency of vaccine dosage are in marked contrast with the full and frequent dosage of antitoxin therapy. One ten-thousandth of a milligram of tuberculin B. E., a safe initial dose of tubercle vaccine, repeated on the third day, seems infinitesimal when compared with 6,000 to 10,000 units of diphtheria antitoxin, repeated every 4 to 6 hours, in laryngeal diphtheria.

Speaking in general terms, autogenous vaccines are preferable to stock preparations. On the latter, however, the general practitioner must largely depend. These bacterins, vaccines, or bacterial vaccines, whichever term you prefer, are standardized suspensions of dead pathogenic bacteria, with their toxins, usually diluted with physiological salt solution. The virus of vaccine is one of the general exceptions.

Following prophylactic inoculation with vaccines, antitoxins develop in the serum of the patient. Immunizing antitoxins for therapeutic use are developed in a similar way in the serum of vaccinated animals. The globulins of this serum carry the antitoxic units. While the immunity obtained from antitoxin is passive, the immediate benefit may be wonderful. Diphtheria, robbed of its terrors, stands forth as the one disease in which antitoxin therapy has won its most signal victories.—Abstracted from *The American Journal of Dermatology* (May, 1910).

FULGURATION AND THE STATIC BRUSH DISCHARGE.

BY ALMO DE MONCO, M. D., DENVER, COLO.

Fulguration by Keating-Hart's method provides for the treatment of tumors in two stages. A first stage in which the surgeon removes the cancerous masses as completely as possible, whereupon the electrotherapist treats the wound thus created with a shower of high frequency sparks, these being long and copious, such as generated by specially constructed coil of tremendous voltage and considerable amperage, the application to the affected parts accomplished by special electrodes. The length of spark is one of the most important factors of the intervention. We must bear in mind that the short spark produces very pronounced and chemical effects, giving rise to a hard scar that undergoes contractions. The long spark on the contrary produces all the effect of a blow, so we get edema of the parts under treatment with little or no sloughing. Finally there is a copious exudation of lymph lasting for several days after the operation, which is followed by suppuration accompanied by very active granulation.

When the wound has been sparked for some time it becomes of a dark hue and the oozing stops. There is a little edema and this gives it a peculiar softness under the finger, in fact, the region is said to be "padded," i. e., the proper condition in which to leave it. The operation thus completed is left gaping and a flat dressing applied.

The foregoing gives in as few words as possible the latest French method of after-treatment of malignant growths which so far has proven quite successful.

The French apparatus designed for fulguration is expensive and quite complicated and in the opinion of the writer will not prove as efficient as a powerful static machine of American manufacture of the present year's vintage. The modern static machine is almost unknown in

continental Europe, even such an electrotherapeutist as D'Arsonval having purchased one in this country a few years ago; therefore such powerful modalities as the static brush discharge and blue pencil flame are almost or quite unknown, hence their investigations are entirely confined to the development of the coil and its application to therapy.

The static brush discharge may be described as an unidirectional convective discharge of a very high potential, violet color, rich in violet, blue violet, and ultra violet rays, attended with the formation of large quantities of ozone and nitrous oxide.

A static machine capable of generating at least one M. A. (1.) at a very high potential is essential. The electrodes are also of great importance and should have terminals such as a wooden ball of one to two inches in diameter, a wooden point, a small sharp metal point, and a small metal ball. The wooden terminals are to be constantly maintained at the proper degree of moisture which experience will soon teach us. If too wet, the discharge is very disagreeable to the patient.

We are to seat or recline the patient, as is preferable, on an insulated platform or table, said platform or table to have insulated legs of at least nine inches in length, because if our machine is capable of generating the amount of current necessary, why allow it to waste?

Connect the patient to the negative side of the machine (be sure to test the machine first), and ground the positive to a perfect ground connection. If we wish to have contact with the patient's feet, the shoes and stockings must be removed because the sparks coming through the shoe nails will prove very disagreeable. Then ground the wooden electrode to a separate ground; this ground must be entirely separate and away from the ground attached to the positive side of the machine. Some operators endeavor to administer all forms of static treatment without any grounds, when two are always required. Be sure the discharging rods of the machine are wide apart. The operator should then assume his proper position and have an assistant start the machine very slowly, and bring it to the proper speed at the discretion of the operator, hold the electrode armed with proper terminal at a distance of ten to fifteen inches from the part to be treated. Give close attention as the machine is gradually increased in speed. When the machine is running slowly and the electrode has the wooden ball terminal, the discharge is spasmodic and sputtering. Now change the terminal to the small metallic point and gradually speed up the machine to full capacity and you will get a concentrated convective discharge and finally a blue pencil flame which, in the opinion of the writer at the present time, is destined to become famous for fulguration purposes. Never suddenly withdraw your electrode while the machine is running at full or even half speed; one experience of this kind will prove sufficient. Always gradually slow down the machine, having the assistant do this while you keep the electrode in position. If something should demand an immediate cessation of the treatment short circuit the machine by placing the electrode in contact with the metallic place on the platform or table.

The sputtering discharge emitted when the machine is running slowly is not unlike in sensation to a collection of fine sparks or hot grains of sand accompanied with cool air, and should be administered by keeping the electrode constantly moving about the parts treated.

The blue pencil discharge differs from the sputtering discharge

because of the greater rapidity or frequency of the discharges giving luminosity; the air subjected to this enormous bombardment of electrical particles becomes luminous.

The ozone, nitrous oxide and all the rays before mentioned have a most pronounced antiseptic action and are most efficient in destroying certain infection. The ozone and nitrous oxide is also present in therapeutic quantities, which can be proven by the use of a starch and K I. solution.

The blue pencil flame should always be applied directly to the skin or wound, and the rapidity with which the skin is tanned proves the presence of ultra violet rays in therapeutic quantity.

The brush discharge contracts first the capillaries—blanching the skin—the dilatation of which occurs and hyperemia, etc., takes place, the duration of which depends on current potential and length of exposure.

In treating an ulcer or open wound with the brush discharge, the surface becomes coated temporarily with a shining glaze or film. The blue pencil flame produces drowsiness and is followed in two hours or even less time by positive sleep; hence it is specifically indicated in nervous unrest, insomnia, neurasthenia, alcoholic or other excesses, producing rest and refreshing sleep. Repeated applications along the entire spine and over the abdomen increases peristalsis as is proven by effect on the stools. After a twenty-minute application the patient is frequently in a gentle perspiration, thus enhancing elimination.

Several writers have observed a very marked increase of haemoglobin in patients treated by positive insulation, followed by the brush discharge, and it is the writer's experience that this occurs in a more or less degree with every modality of the static current. The results in a tabulated form are too long for this article. They can be easily demonstrated by those who may so desire and are in possession of a suitable static machine.

The brush discharge is to be thought of in all cases of lupus, psoriasis, herpes zoster, eczema, acne, and other skin affections, the writer having cured one case of lupus vulg. of nine years duration, in forty applications, using the wooden ball and pencil terminals, each application of twenty minutes duration, and made daily for a time.

Synovitis subjected to the Morton wave modality for twenty minutes, followed with the brush discharge for ten minutes, is very satisfying to patient and physician. It is understood that where pus is present it should first be evacuated—surgical oedema, contusions, fractures, ecchymosis, and lacerated wounds, are always greatly enhanced in healing by the judicious use of the brush discharge. The pleasant part is the quick removal of pressure and the consequent relief of pain.

Most gratifying effects have resulted in severe cases of neuritis of the sciatic nerve, due to prostatitis. So-called lumbago, due to prostatitis (gonorrhoeal in origin) has been quickly and permanently cured by the brush discharge concentrated to the blue flame.

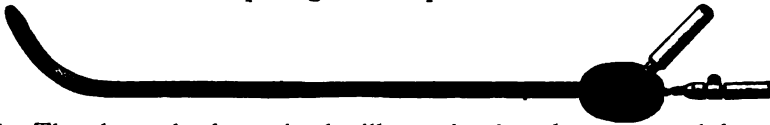
In conclusion, I wish to advise all physicians in possession of a static machine of such efficiency as herein described, and not valued for fancied psychological purposes, to give the static brush discharge some practical use and collect large interest on the monetary investment.—Reprinted *in toto* from the *California Electric Medical Journal*, July, 1910.

AN ELECTRODE FOR IONIZATION OF SILVER, ZINC, OR COPPER IN THE TREATMENT OF CHRONIC URETHRITIS.

BY J. J. P. ARMSTRONG, M. D., DOUGLAS, ARIZ.

For some months I have been working on the ionization of silver, zinc, and copper, in the treatment of chronic urethritis, and believe that I have an electrode that will prove to be of benefit to those members of the profession who may be interested in this line of work.

I use a Neiswanger cataphoric electrode, made of hard rubber, with the tube closed at the lower end, bent to a proper urethral curve and perforated with small openings for a space of six inches from the distal



end. The electrode shown in the illustration is only perforated for about two inches. The proximal end is pushed into a head, also made of hard rubber, to which is attached a twisted wire of silver, the length of the tube, and connected to a socket for the cord-tip. To the side of the head is attached a small metal tube one inch in length, which communicates with the long perforated tube, and which is connected by rubber tubing to a glass syringe having a long tip and capable of holding an ounce of 1 per cent silver nitrate solution.

With the patient on his back I lubricate the electrode with a lubricant consisting of two drams of gum tragacanth and four ounces each of liquor antisepticus (N. F.) and distilled water, and pass it down the urethra to the neck of the bladder, which grasps it.

Then, having the patient hold the end of the penis tightly about the electrode, I fill the urethra full of the silver nitrate solution, and, connecting the electrode socket to the positive side of the galvanic current, and having a large, well-moistened dispersive electrode on the abdomen connected with the negative pole, I turn on a weak current and gradually increase it to ten or fifteen milliamperes for ten minutes.

Some patients appear to do better on zinc and others on copper, and for these I use the same apparatus, only substituting a zinc or copper wire and a 1 per cent sulphate solution or $\frac{1}{2}$ per cent copper sulphate solution as may seem best in the particular case.

The long perforated tube, being easily detachable from the socket head, can be cleansed more satisfactorily.

These applications are best made not oftener than every third day, and in the majority of cases will produce the desired result after not more than four or five treatments.

Clinical experience has taught me that the indications for the use of this method are, the "morning drop" with long, small, yellowish particles, some floating and others sinking in the urine; and those cases in which the urethroscope shows fine granulations.—Reprinted *in toto* from *Journal A. M. A.*, July 2, 1910.

The only difference between a
rut and a grave is that one is
wider and deeper than the other.
—Hugh Chalmers.

BOOK REVIEWS

DISEASES OF THE STOMACH AND INTESTINES. By Robert Coleman Kemp, M.D., Professor of Gastro-Intestinal Diseases, New York School of Clinical Medicine. Octavo of 766 pages, with 279 illustrations. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, \$6.00 net; half morocco, \$7.50 net.

It is obviously impossible to review in detail a work so extensive and covering so many topics. What strikes the reviewer most forcibly is the originality displayed in a field which has been so many times covered by other authors. This is, at once an advantage and a disadvantage. For the practitioner well acquainted with routine and with literature a book which presents a large proportion of items not available in ordinary reference works or which may be entirely unfamiliar, saves time and makes the most interesting reading. On the other hand, for the undergraduate, student or the young physician preparing for this particular line of practice, Kemp's book can scarcely supplant, though it may supplement, the older authorities.

In speaking of this work as original, we do not mean to imply that the author has ignored the work of others, yet it seems that he has drawn upon it rather unsystematically, ignoring many details, sometimes failing to give due credit for studies too fresh to be considered as yet a part of the general professional lore, emphasizing too prominently certain devices, and sometimes approaching the incompleteness of a scrap book.

Somewhat the same criticism may be made of the mechanic aspects of the book. The paper and type are good, but the illustrations give the same impression of patchiness. Those illustrating anatomy and histology are decidedly diagrammatic. The few cuts showing microscopic appearances of feces, exaggerate the plainness of food remnants, are liable to confuse the inexpert by presenting practically impossible "combination" pictures and deal rather with extrinsic objects than appearances from which definite diagnostic data can be obtained. The artist-model pictures which shocked many prudish reviewers when they appeared in Butler's *Diagnostics of Internal Medicine* are interspersed with many crude cuts. On the other hand, some of the plates, especially the colored ones, are of the highest grade. The colored illustrations of tests for gastric acidity are excellent for the resorcin and phloroglucin-vanillin reactions. The dimethyl-amidoazobenzol test for HCl is also accurate as to tint, but it shows what occurs when the test is overrun about ten degrees. The tint that marks the neutralization of *free* HCl is fairly well shown by what is labeled "Phenolphthalein end-reaction. Total acidity."

It would be very easy to condemn Kemp's work on many counts, not because it deserves condemnation, but because it is a strong, virile presentation of subjects of live interest, about which opinions have not crystalized to such a degree as to put an end to discussion. Our advice is: Buy the book, find fault with it, and then realize that you do so because it has stimulated your own recollections and power of thought.

BENEDICT.

BIER'S TEXTBOOK OF HYPEREMIA. By Professor Dr. August Bier, of Berlin. Authorized translation from the sixth German edition by Gustavus M. Blech, M.D., Professor of Surgery, Illinois Medical College, etc. 439 pages, with 39 illustrations. London, Rebman Limited. Cloth 12/6 net.

It is unnecessary to add very much to the general opinion that the profession in this country has of Professor Bier. His high standing in the medical circles of the world's greatest medical center (as they call it in Berlin), his conservative and original work and the fact that he is one of Germany's most progressive investigators give much weight to anything that he may say or write. In this country, however, we have a habit of discounting names and looking to results; and in this book one will find material which we confidently believe will enable the practitioner to obtain results in a great variety of conditions which when treated by other means did not readily yield.

Professor Bier has explained the principles as well as the working details of hyperemia and in a way that at once interests and captivates his readers. The translator's work has been well done and the spirit of the author has not been buried by the change of language.

This book should form a part of the reference library of every physician who knows (or wants to know) what good there is in the field of non-medical therapy.

(The book was received direct from the London office of Rebman's, Ltd., and we had to pay duty on it. Undoubtedly it may be obtained direct from New York at about \$4.00. It would be a good investment.)

PHYSICAL THERAPEUTIC METHODS. By Otto Juettner, Ph.D., M.D., Professor of Physical Therapy, Cincinnati Polyclinic. Octavo, 636 pages, with many illustrations. Cincinnati, Harvey Publishing Company, 1909. Half morocco, \$5.00 net.

So far as we are aware, this excellent book is the only real *vade mecum* of physiologic therapeutics in our language. Our more progressive German cousins have a number of extensive works devoted to this more important phase of therapeutic medicine. The fact that there is a paucity of such literature in English does not diminish the importance of the non-medicinal methods of treatment; on the contrary it should call for greater efforts on the part of those who are devoting their time and talent in the investigation and dissemination of the important truths that at present lie hidden for want of some one with sufficient interest and initiative to uncover them.

This Doctor Juettner has done in a very plain and comprehensive manner. Those interested in physiologic therapeutics would do well to have a copy in their library *and use it* (although this book is most beautifully gotten up, its value as an adornment to the physician's library is as nothing compared with its real, practical helpfulness), while those who are not (yet) interested in physiologic therapeutics will speedily become so when they read this splendid book through.

The author is to be congratulated for his work in preparing this book and its eminently successful outcome.

A MANUAL OF NATURAL THERAPY. By Thomas D. Luke, M.D., F. R. C. S. (Edin.), Physician at the Peebles Hydropathic, Lecturer at the University of Edinburgh, Fellow of the British Balneological Society, Member of the Electro-Therapeutic Section of the Royal Society of Medicines, etc. 303 pages, with 30 plates and 125 illustrations. New York, William Wood & Co. Cloth, \$2.50 net.

Most books on therapeutic subjects are rather dreary reading. This one is an exception. Doctor Luke has here made the broad field of "Natural Therapy" intelligent to the reader, and in terms that lead him from chapter to chapter regardless of his appointments. We do not say this in anything but a commendatory spirit, would that more books had this attractive feature.

The subject of non-medical therapy has been taken up very systematically. Beginning with a very comprehensive 90-page section on Hydrotherapy, the author leads us in turn through the study of Heat and Light, Massage, Electricity and Diet. These phases of Natural Therapy are discussed in a simple, everyday style which makes the reading both easy and interesting. The final chapters are devoted to the "modern cure," which includes the handling that one receives at the spa or institution.

The bibliography at the end of the book is exceptionally well prepared, and a feature which, in our mind, is well worthy of praise. The plates and illustrations are excellent, and while we remember having seen several of them before in other books, we became acquainted through them with apparatus of which we previously had no knowledge.

The sanatorium or institution physician will appreciate this book, and we recommend it cordially to all of our readers.

HIGH-FREQUENCY ELECTRIC CURRENTS IN MEDICINE AND DENTISTRY. By S. H. Monell, M.D., Author of "A Pictorial System of Instruction in X-ray," etc.; "Manual of Static Electricity," etc. 8vo; cloth, 455 pages; illustrated with 32 full-page plates. New York, Wm. R. Jenkins Co., 851 Sixth Avenue, 1910. \$4.00.

Dr. Monell has occupied a conspicuous place as a teacher and as a writer on electro-therapy. His works are comprehensive and the present book is no exception. We wish space would permit publishing in its entirety the fable which introduces the book. It aptly characterizes the various view-points in electro-therapy. Monell calls high frequency the "fifth medical current." He discusses exhaustively the action of these currents on the various organs of the body and illustrates by excellent plates their application in treatment.

The work is entertainingly written and should meet with the large sale that has been accorded to the author's previous books.

EBERHART.

CORRESPONDENCE

Death of Two Operators Due to the X-Ray.

August 8, 1910.

TO THE EDITOR:

On July 12th our lamented colleague, Mihran K. Kassabian, of Philadelphia, and two days later, Harry W. Cox, of London, died from the use of the x-ray. Mr. Cox, who was an electrician and inventor, did pioneer work in England in this line. Eight years ago an x-ray dermatitis began on the left hand. The danger of the affection was, at that time, not understood and little notice was taken of it. Slowly the disease advanced until five years ago a finger had to be amputated. The whole left hand was gradually attacked, and about eighteen months ago, practically all of the hand was removed. Still the disease progressed, and last September the right arm was amputated. In the mean time Mr. Cox continued his work and in the midst of his suffering perfected many important inventions. Finally, the neck and face were involved, and he died July 14th. While on his death-bed, he said: "I would gladly go through it all again to accomplish what I have been permitted to do for the benefit of my fellowmen."

The intense sympathy aroused in England at the series of misfortunes that befell Mr. Cox was the means of raising a fund of \$14,000 for the benefit of the sufferer, and the British government contributed another \$1,000.

Doctor Kassabian, a naturalized Armenian, was director of the Roentgen laboratory of the Philadelphia General Hospital. For a number of years he had been experimenting with the x-rays. In 1902 he received his first burn. In 1908 his hands became so badly affected that Dr. W. W. Keen removed two fingers. This operation did not check the progress of the cancer-like disease. A year ago the glands in the left axilla, having become affected, were removed by Dr. J. C. DaCosta, but without any better results than the previous operation. Soon a third operation, more extensive and serious than the previous one, was done and certain muscles on the left side of the chest were removed. The doctor seemed at first to rally and continued his work with his usual vigor and interest. At the beginning of July, when at the hospital having his wound dressed, he collapsed, and in spite of the most careful and constant attention, he became progressively worse and died, as I mentioned before, on the 12th.

With the death of these two men, the scientific world, as a whole, and the medical profession in particular, loses two valuable investigators. The work that they have accomplished, evidenced by tangible apparatus and books (for Dr. Kassabian had just finished the revision of his excellent book before he was taken with his last illness) will live forever.

These two deaths occurring so close together, both results of a disease which in both cases lasted about the same length of time, should remind us of the dangers run by earlier investigators with the mysterious rays. They should also warn us to exercise greater discretion with our use of the rays.

Doctor Kassabian did much to advance the cause. He kept a list of all untoward actions of the x-ray and complete history of the operators who died from the effects of its continuous use. He taught us

how to use the ray safely, both to our patients and to ourselves, and those of us who know him mourn his loss. We shall never forget the many things he taught us, which he learned at the expense of his life.—W. H. Mick, Omaha, Neb.

[We were much pained to hear of the death of both of these men. The writer was personally acquainted with Mr. Cox, having first met him at a meeting of the British Medical Association in Exeter, England, in 1907. At that time the effects of the burns were very plain to any observer, but the marvelous enthusiasm of the man left an impression which is not yet forgotten. We feel that the profession does not even yet fully appreciate the hidden dangers of these wonderful, invisible rays, and it is a pleasure to be able to promise to our readers an excellent article on this subject by Dr. J. N. Scott, of Kansas City, Mo., entitled, "The Influence of Radiation on the Operator." This will appear in the November issue of *PHYSIOLOGIC THERAPEUTICS*.—ED.]

Teaching Electro-Therapy.

July 16th, 1910.

TO THE EDITOR:

The July issue of *PHYSIOLOGIC THERAPEUTICS* is certainly an instructive one for either the specialist or the general practitioner. The editorial remarks in regard to the teaching of electro-therapeutics in the medical schools are indeed very timely. In the medical department of the University of Kansas I have been giving a lecture one hour each week and a clinic two hours a week during the students' senior year. In my work I do not teach that the galvanic current is used in the treatment of any special diseases, nor the faradic or any other forms of electricity. I first have the students thoroughly review the physics of electricity and see to it that they fully understand the difference between the different currents. I then take up each piece of apparatus—the galvanic, faradic, high-frequency, etc.—and try to explain the therapeutic effects of the currents obtained from each apparatus, just as *materia medica* is taught—each drug is taken up and its therapeutic possibilities explained.—J. N. Scott, M.D., Kansas City, Mo.

[There is no doubt that this is the proper way to train beginners in the study of electro-therapy. It is, in our minds, at least, absurd to try to take up a more or less indefinite disease-entity and outline a hard-and-fast regimen for its treatment. Such measures savor very much of a common method of "teaching" drug-therapeutics, viz., discussing a given remedy or combination of remedies and its utility in a certain definite list of diseases. We agree heartily with Doctor Scott.—ED.]

Experience With Electricity in Post-Partum Hemorrhage.

July 18, 1910.

TO THE EDITOR:

In the fall of 1868 I was called in consultation in a case of severe post-partum hemorrhage. I happened to take my electric battery along with me and as soon as possible placed the negative sponge elec-

trode of my primary interrupted current at the middle of the cervical vertebrae and the positive electrode on my right hand which was introduced far up into the uterus.

The machine was started and the current gradually increased until the uterus commenced to close down on my hand and the arm cramped quite severely. The hand was slowly withdrawn until past the os and left in the vagina up against the os for about thirty minutes, gradually reducing the strength of the current to a pleasant constricting strength. This completely stopped the flow.

The lochia was very scant and of short duration. The milk was fully established without fever between the second and third day. The woman made a rapid recovery and enjoyed better health than at any time since she entered womanhood.

In forty-seven years of practice I have met several such cases with the same results. The time taken to administer the treatment was in each case from thirty to forty-five minutes. One or two cases required about an hour.—Morris Hale, Hot Springs, Ark.

The Non-Toxicity of Benetol.

July 24, 1910:

TO THE EDITOR:

Two interesting incidents occurred in Minneapolis recently which bear out the statement that Benetol is non-toxic. Mr. Albert Leadstrom, a druggist, reports that a woman came into his store crying that she had poisoned herself and was in a highly hysterical condition. She was calmed sufficiently to allow the druggist to find out what she had taken. She showed him a bottle labeled "Benetol" and said that she had taken a tablespoonful, thinking that it was Aromatic Cascara Sagrada. She was reassured that no harm would come and returned to her home. A few hours later Mr. Leadstrom went to see her and again the next day and learned that aside from a slight laxative action nothing untoward had occurred.

The second case was that of attempted suicide. Mrs. G. B., of Minneapolis, took the contents of a two-ounce bottle of Benetol with the intention of ending her life. She supposed that she was getting the desired results and became hysterical. Her husband, hearing the disturbance, entered the room and found her on the floor, perfectly conscious but in hysterics. He had the woman immediately removed to the City Hospital. The interne in charge asked if there was anything else in the bottle beside the Benetol. The husband did not know. It was then decided to wash out the stomach. A hour having passed since the germicide was taken, little was found in the stomach. No further treatment was given, and the patient returned to her home the afternoon of the same day. No unpleasant action whatever was noticed, not even on the buccal mucous membranes.

When one contemplates the large number of lives lost either by mistake or by intentional use of the poisonous antiseptics, foremost among which are carbolic acid and cresylic acid preparations; the absolute non-toxicity of Benetol, demonstrated beyond question in these two cases, is a factor of immense importance and something that every physician and surgeon should know.—H. C. Carel, Minneapolis, Minn.

QUERIES

A Blue Reading Glass.

Can you tell me where I can get a blue reading glass about 3 inches in diameter and at what price.—Dr. J. L. Asire, Zion, Mo.

No such thing can be bought here in Chicago; and they have quite an assortment of goods in this little town. The only reason is that there is no demand for such an article. One would suppose that an ordinary reading glass could be stained for a small additional cost. Incidentally for what purpose is this glass to be used? Possibly you have something good "up your sleeve." Have you some new ideas on the use of concentrated blue light? Or what?

Static Machine—H F. Currents.

I have a 2-plate mica static machine, which I operate by a water motor at 2,000 revolutions per minute. It is claimed that this is sufficient to produce a high frequency current. Will you advise me whether this will do satisfactory work.—J. M. Doyle, Neala, Iowa.

Theoretically, any static machine will deliver a so-called high frequency current if a resonator is added, at an expense of \$75.00, but we are more or less skeptical of its therapeutic value, because of the small amount of current which the static machine delivers.

The *voltage* in every instance is high enough, but in order to get tangible results one must have a quantity of *amperage* at his disposal. For example, in order to secure the most profound effects in auto-condensation and auto-conduction (high frequency modalities) a current strength of as much as 1,000 milliamperes is indicated.

In support of our contention that the current output of the static machine is limited, we quote verbatim from Dr. W. B. Snow's book on "Static Electricity": "The static currents are of relatively high voltage, but possessed of a quantity (current) so small that no milliamperemeter now manufactured will measure the current of the most powerful machine."

High frequency therapy is one of the most valuable modalities in electro-therapeutics and we strongly urge the installation of a first-class high frequency apparatus which is operated direct from the lighting current.

In case you have no electric light circuit available, a small dynamo could be belted to your water motor. The current derived from this dynamo will be sufficient to operate the high frequency machine, and the satisfaction which you derive from it will more than repay you the amount invested. The cost of a good high frequency coil and dynamo will be between \$100.00 and \$200.00, according to the output of the apparatus.

Treatment of Utero-Abdominal Atonia.

I have had a patient (Mrs. J. W. R), age 40, under my care for the past ninety days and am not satisfied with the progress I am making. She has given birth to five children in the last eleven years.

General health good. Abdominal muscles relaxed and uterus in a very flabby condition.

Have administered the usual internal remedies, hygiene and exercise, but improvement is slow. I have heard that electricity is indicated in such cases, but *what* modality to use is the problem that confronts me.

Can you suggest through your "Query" column what electrical modality, if any, is indicated?—T. J. R., California.

The sinusoidal current is unquestionably *the* specific in the case you mention, providing the alternations of the current are under control and slow enough to gradually contract and relax the muscles alternately. To apply the current to the abdominal muscles use large pad electrodes anterior and posterior. In order to tone up the uterus, apply a large pal electrode to abdominal region and a suitable uterine electrode in the uterus. Use a fairly strong current with the alternations ten to twenty per minute.

The Victor Multiplex Sinusoidal outfit is an ideal apparatus for this class of work.

An Office Outfit.

A correspondent writes: "What would be the best outfit for the practice of physiologic therapeutics in a town of about 7,000? Office rooms are limited to four, including reception room."

We attempted to answer this question. Our attempt did not satisfy us at all. It's a big proposition to set down in black and white the best suggestions. We are not printing them here, but instead propose to make two special articles called "The General Equipment of the Small Sanatorium" and "The Electrical Equipment of the Up-to-date Medical Office." They will appear in early issues of **PHYSIOLOGIC THERAPEUTICS**.

Success is made of never-ending endeavor, opposed by never-ceasing disappointment—a fight to the finish, always won by backbone and brains.

Man's proper business in this world falls mainly into three divisions: First, To know themselves, and the existing state of things they have to do with. Second, To be happy in themselves, and in the existing state of things. Third, To mend themselves and the existing state of things as far as either are marred and mendable.—John Ruskin.

THE EDITOR'S PERSONAL PAGES

Last issue was 96 pages. This time it is 104. Something doing. "But how long will it last?" says one. Not long for there must be a limit to all good things. I shall plug hard, however, for fifty pages of paid advertising and between 60 and 70 of straight reading matter. Will you help me to keep this up? You know an advertiser wants to see results. He wants to know that the space in my journal for which he is paying is delivering the goods. Will not you, Doctor, put forth an extra effort and help me to make my advertising pages pay? If you do it will pay you, pay the advertiser and pay me. And it's easy, too!

* * *

In looking through a bunch of letters to pick out some of the kind words reprinted elsewhere in this issue I ran across an idea that was repeated no less than eight times. Here it is in the words of Doctor W. H. Seymour, Charles City, Iowa. "Number one of your journal is exceptionally good for the physician wanting results. . . . If succeeding issues keep up the standard set, success is already yours."

The "if" is the part to which I had particular reference. Here is the third issue—what about it?

* * *

The proof sheets of the new *Journal of Physical Therapy* are before me. Doctor McIntosh sent them to me so that I would be able to see them before making up this present issue. They looked good to me and although I have yet to see the finished journal those proofs are enough to make me suggest that you sit right down and have the Therapeutic Publishing Co. of 703 Washington St., Dorchester, Boston, Mass., send you a sample copy and subscription blank right away!

Of course you couldn't get me to say that this new journal is better than mine. Who ever heard of a mother telling how much nicer the other woman's baby was than her own! But it's good all right, and you had better take my advice now and get a copy before they are all gone.

* * *

Would you spend *two cents* on a couple of postals and sit down and write one to me giving the name and address of one (or more) physicians interested in physical therapy to whom I might send a copy of *PHYSIOLOGIC THERAPEUTICS* and an invitation to subscribe; and the other to your friend advising

him of what you have done and to subscribe sure? If you will do this as a special favor I shall be greatly obliged. Thanks.

* * *

I want to call particular attention to the advertising index and the little preachment that precedes and follows it. I freely confess that I have seen something like this style in many of the lay magazines; but so far I think that it is original with medical journals. At all events you know why it is there. I don't doubt for a minute that you read through the advertisements in *PHYSIOLOGIC THERAPEUTICS*, and, maybe, answer a few of them; but I want to impress as thoroughly as I possibly can the fact that the advertising department of this journal is of equal importance with any other. It has to be well-edited, well-filled, well-read and well-used in order that the existence of this journal may be assured. Why not then, as a personal favor to me and of equal good to yourself, sit right down and find out a few things about the articles offered for your delectation? If you don't do it we both lose!

* * *

The last (and first) issue of *The Physicians' Business Journal* has at last first appeared. Don't laugh—get busy and write to Doctor P. B. Thatcher for a copy. (310 Bulletin Bldg., Philadelphia.) Here's a journal that is worth its weight in gold to the physician—the poor, underpaid, hard-working physician. We need a little more of the business-end of our practice impressed upon our minds, and Thatcher proposes to do it at a dollar a year. 'Twould be a good investment.

* * *

In my last issue I said something about the suspension of *The Backbone Monthly*, and I made a mistake. I take it all back. The following letter will explain:

CHICAGO, July 18th, 1910.

MY DEAR DR. HARROWER:

Congratulations on your July issue. It is a "corker" all the way through. However, we are more mortified than you are to see the *Backbone* notice on page 124. The *Backbone Monthly* has not been suspended. It is living and growing better than ever before. Didn't you see the June issue? It was the best number that was ever put out. See the *Backbone* notice in June *Clinical Medicine* and also in July. The journal has merely been

sold to the Backbone Society of Aurora, Ill., where it will be published hereafter.

The present subscribers will be carried out to completion at the fifty cent price, although the subscription rate will be increased to a dollar a year with the August issue, therefore, you will see that the present subscribers will get more than their money's worth. Will you please correct this statement in your next issue, and very much oblige

Very truly yours,

S. DEWITT CLOUGH.

The new *Backbone Monthly* is likewise a corker. It comes in a new dress, and is now under the editorial management of Tom Dreier one time editor of *The Business Philosopher* and *The Caxton Magazine*. It is bigger and better than ever and even though it now costs a dollar a year it is well worth it. The first article in the current issue (about doctors) is the best reading one could wish for. Maybe you could get a copy of this issue as a sample, with a view to subscribing.

* * *

A FEW KIND WORDS.

I want to call the attention of the readers of this journal to the new JOURNAL OF PHYSIOLOGIC THERAPEUTICS. This Journal will cover the entire ground of mechanical and physiological measures in the cure of disease, and as the THERAPEUTIST covers the ground of medicine—drug application—the two Journals ought to make a good "team" for every doctor.

Dr. Harrower is energetic, liberal-minded and enthusiastic, and he is bound to go to the top with his Journal, and I want to help him, if possible, and I solicit the co-operation of my readers.—*Ellingwood's Therapeutist*, June, 1910.

* * *

"I am in receipt of the first number of the AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS, and congratulate you on its excellent appearance. I am confident that there is a demand at this time for such a publication and extend you my best wishes for your success.

GEORGE D. KAHLO,
French Lick Springs, Ind.

* * *

A month or two ago we called attention to the early appearance of THE AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS, which has just been floated by our good friend Harrower. It makes good its promises. It is indeed bright, energetic and bubbling over with enthusiasm, and in every way worthy of its brilliant owner and editor. It is pub-

lished bi-monthly. Price, \$1.00 a year.—*Am. Jour. Clin. Medicine*, June 1910.

* * *

The AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS is the latest medical publication to make its bow to the profession. The editor and publisher is Dr. Henry R. Harrower, 72 Madison street, Chicago, and the journal will be issued bi-monthly.

The editor, in his salutatory, states his confidence in drugs, "dependable, accurate and positive medication but believes that the "importance of non-drug therapy is not properly mirrored in the medical literature of today."

The first issue is very attractive in make-up and contents, and the editor is to be congratulated on the success of his endeavors.—*Louisville Monthly Jour. of Med. and Surg.*, June, '10.

* * *

"Let me congratulate you upon the appearance of your first number. The contents are all good and the many good things promised have constrained me to change my mind and send you the subscription price for the coming year."

BOARDMAN REED,
Alhambra, Cal.

* * *

The second number of the AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS is at hand, and more than justifies its publication. Contrary to the general order of things, it shows a marked improvement in every way over the first issue. Usually a new journal expends so much enthusiasm and copy making a good display in its first issue, that the next few numbers suffer by comparison. Dr. Harrower has excelled himself in his second number. And it's all meat—no padding. Even the abstracts are the real stuff; but of them there is only a modest and judicious modicum. The bulk of the journal is fresh, original, pithy matter. And the best part of it is matter not furnished by the ordinary medical journal.—*Medical Brief*, Aug., 1910.

* * *

I want to congratulate you. PHYSIOLOGIC THERAPEUTICS is the brightest, most practical journal I ever read, and if you keep up the standard I predict for it a most brilliant and successful career.

H. F. PITCHER,
Haverhill, Mass.

* * *

Among our exchanges we have received the AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS for May, Vol. 1, No. 1. This is a very neat journal, about the size of the *Journal of the Mich-*

igan State Medical Society. The editor, Dr. Harrower, is to be congratulated upon the appearance and value of his first number. The subject matter is limited to drugless treatment of disease and the original articles of the first number deal with electrical and radiant energy. There are many good articles promised.—*Jour. Mich. S. Med. Society*, June, 1910.

* * *

A NEW JOURNAL.

Dr. Henry R. Harrower of Chicago, whose writings from time to time have appeared in the columns of *The Era*, has launched a journalistic venture in the shape of the AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS. I believe there is a splendid field for just such a journal and I look for it to meet with a larger success than could be predicted for the average medical journal infant. There is a great deal in the practice of medicine beyond drug giving and many a man, to his complete satisfaction, is finding this out. The journal is a clean, well printed paper and if succeeding issues hold up as well as the one before us, its success is fairly well assured.—*Medical Era*, June, 1910.

* * *

"I received the first copy of *The AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS*" and in spite of the pile of work that I have before me I cannot restrain congratulating you on the splendid journal you got out. . . . A good journal of physiologic therapeutics is a necessity and I congratulate you on being the editor of such a journal."

WM. J. ROBINSON,
New York City.

* * *

We are glad to welcome into the field of therapeutic journalism this new journal, of which the initial number lies before us. It is under the management of Dr. Henry Robert Harrower, Professor of Clinical Diagnosis, Bennett Medical College, who has the able support of a large number of eminent and capable exponents of physical therapy.

In this list we note, among others, Dr. Noble M. Eberhart and Dr. C. S. Neiswanger, of Chicago; Dr. Curran Pope, of Louisville, Ky.; Dr. Thomas D. Crothers, of Hartford, Conn., all eminent in their chosen departments. The field is wide, and large enough at present for all who may care to enter it.

The letterpress is excellent, and the proofreading gives evidence of careful editing. Too little emphasis is sometimes placed upon careful proofreading.

Incorrect spelling and carelessness in the preparation of copy are a species of affront to intelligent readers, and are often responsible for the contempt into which journalism sometimes falls.

We commend this new magazine to students of physical therapy as representing an intelligent and conscientious effort to cultivate the rich field of physiological therapeutics.—*Journal of Physical Therapy*, Aug., 1910.

* * *

I have received your excellent journal, and want to "hand you one." It certainly is a dandy and a credit to you. You deserve a great deal more praise, credit and patronage than you will ever get.

H. C. BENNETT, Lima, Ohio.

* * *

The AMERICAN JOURNAL OF PHYSIOLOGIC THERAPEUTICS.—This new journal, the first number of which is dated July, 1910, is published by the editor, Henry R. Harrower, of 72 Madison Street, Chicago. Dr. Harrower has produced a journal of distinct value, and we welcome him and his journal to the editorial field. There is probably needed just such a journal as the doctor attempts to make, certainly the non-medical methods of treatment are deserving of every consideration on the part of the practitioner, and we expect for this journal a support which the subject deserves.—*Illinois Medical Journal*, Aug., 1910.

* * *

The issue of PHYSIOLOGIC THERAPEUTICS which you sent is certainly a most interesting and valuable one. I shall esteem it an honor to be one of your contributors in the near future.

SINCLAIR TOUSEY,
New York City.

* * *

It did not seem possible that there could be found in medical journalism a field uncovered. Dr. Harrower discovered one, however, and he is covering it so well that there is no danger of any one trying to share it with him. We congratulate him upon his success in the first two issues and wish him prosperity.—*Physicians' Drug News*, Aug., 1910.

* * *

I certainly feel gratified for these kind words. More another time.

Henry R. Harrower.

TRADE BOOSTERS BY THE EDITOR

On page xvii of this journal you will find a letter which has been reproduced for your express benefit. Favor me by reading it.

I don't know how many of my readers are planning to go to either the meeting of the Mississippi Valley Medical Association at Detroit, September 13 to 15 or to the American Electrotherapeutic Association meeting at Saratoga. Doctor Crothers, the President of the A. E. T. A., writes that they expect to have an unusually large meeting at Saratoga with better quarters in the U. S. Hotel.

I hope a goodly bunch will attend both meetings and get a little more mental pabulum before the busy season begins. And, by the way, why not make a point of going on the Grand Trunk?

* * *

I have received a copy of the Summer number of *Helpful Hints for the Busy Doctor*, as live a trade paper as any one could wish for; and cannot refrain from recommending it most heartily to my readers. While by no means in harmony with the therapeutic ideas of this journal, it is good enough for any of those of our readers who use every form of the healing art. I would suggest that if you have not already received one that you write to the Abbott Alkaloidal Company, Ravenswood, Ill., and request a copy. It will be well worth your while.

* * *

The L. Woolf Mfg. Co. recently sent us a copy of a beautifully gotten-up booklet called "Lives and Reason Saved." This book deals with hydrotherapeutic appliances and is certainly well worthy of your reading. You may not at this time be in the market for anything in their line; but get the book. Don't address them as one reader did—in my care! The L. Woolf Company are the largest plumbers in this part of the country—largest in the whole country for all I know. Anyway, address them "Chicago."

* * *

A valuable little booklet entitled "The Present Status of Vaccine Therapy" came from Messrs. Parke, Davis and Co., Detroit, the other day. Doctor Duncan, the author, has given in this booklet a resume of the latest thought along these lines and I would suggest that those of our readers who are at all interested in the use of bacterial vaccines should procure a copy.

Do you use the X-Ray in your practice? If so, have you never had trouble with your tube-vacuum just when you were rushed the most? Take my advice and get in touch with the Macalester, Wiggin Co. (Boston or Chicago) and learn about their new tube advertised on page —. It saves much swearing.

* * *

Read the Justrite ad. on page xxix; it is just right and you would be spending a penny well to find out more about their splendid pail and their equally splendid lamp outfit.

* * *

Incidentally there are several pretty good propositions waiting for somebody who is far-seeing enough to answer some of the want ads. in the classified department. See page xviii.

* * *

The Victor Electric Company make only the best. You can't buy "cheap trash" from them. Their special \$130 outfit is certainly well worth the money, and this special offer (at regular prices) is made to show you that you don't have to pay "the long price" to get the best.

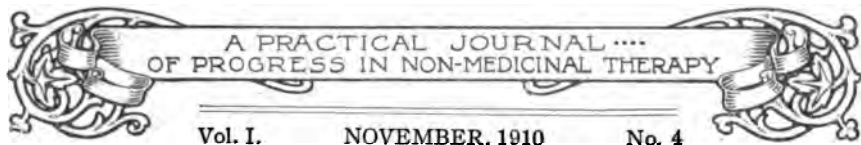
CLASSIFIED ADVERTISEMENTS.

A good place for readers of **PHYSIOLOGIC THERAPEUTICS** to advertise who desire to buy, sell or exchange apparatus, locations, etc. Minimum rate, forty words for one dollar. Each additional word, three cents. Cash must accompany order. Forms close the 15th of the month preceding date of issue.

ATTENTION!—I am in a position to save you some money on your next order of office appliances. Write for bargain list. F. F. Burdick, 103 Randolph street, Chicago.

JUST RECEIVED—Extensive equipment of deceased physician. X-Ray Coil and Table, H. F. Tubes, etc.. Wall Plate, Therapeutic Lamps, Ozonator, and other appliances, all in excellent condition. State your needs—maybe you can satisfy yourself with a SNAP! Write or wire John McIntosh, 37 Randolph St., Chicago.

THE AMERICAN JOURNAL OF
Physiologic Therapeutics



EDITORIAL

THE RIGHT KIND.

Just as we were making up the copy for this issue and were pondering what would do for a good start-off, we received one of the nicest and most sensible letters that it has been our pleasure to read for a long time.

It seemed so thoroughly appropriate that it occurred to us to reprint it entire. We do so, omitting only reference to the writer for reasons which will later be apparent:

———, October 23, 1910. .

Dear Doctor Harrower:

"Several times I have spoken about **PHYSIOLOGIC THERAPEUTICS** to my ultra-conservative Eastern confreres. You are aware, no doubt, that most of our Eastern medicos walk about in a little circle of prejudices, and that they are all "from Missouri" when the question of a new publication comes up, particularly when it happens to be devoted to a field of work which many of them do not consider worth cultivating.

"To show my interest in their future welfare, and my confidence in the future and worth of **PHYSIOLOGIC THERAPEUTICS**, I am sending you herewith my check for three dollars with the names of three "doubting Thomases" whom, I feel assured, a year's reading of your journal will aid greatly in bringing "from darkness into light."

"Please enter each of their names for one year's subscription, but I would ask that you make no mention of me in regard to the matter. I think the friends of **PHYSIOLOGIC THERAPEUTICS** can do more for it in this way than in any other, and at the same time they will be serving their friends.

"I shall be surprised if in this way you do not receive more subscriptions, and at the end of the year, not only these men, but some of their friends also, as regular subscribers.

"The slips you sent me I have mailed to other medical friends.

"Wishing you the best of continued success,

I remain, etc.

Now, wouldn't that warm the cockles of your heart?

The Doctor's suggestion is in truth a good one, the more especially so as before the next issue of *PHYSIOLOGIC THERAPEUTICS* is published we will have reached the Festive Season. And since the New Year's issue will be a double number and eminently suitable to convert any "doubting Thomas," why not follow this example?

In such cases a dollar goes twice as far as usual.

ARE VACCINES DANGEROUS?

The growth of Vaccine Therapy—that most wonderful addition to the possibilities of the work of the general practitioner—has been hampered to no inconsiderable extent by a mistaken and exaggerated fear of the dangers of the so-called "negative phase."

Rather than dilate here upon the physiology of this phase, which we presume is appreciated by our readers, we will endeavor to instill a feeling of confidence to supersede the dread which has seemingly been all too common.

Vaccines are not dangerous. This statement is made with all due deference to the feelings of many whose articles and statements we have read or heard. We qualify our statement by adding "if properly used." It is evident that the utilization of Bacterial Vaccines carries with it possibilities of harm; but no more so than the use of every drug in the *Materia Medica* and, for that matter, every procedure in *Physiologic Therapeutics*.

In our opinion the majority of the profession, by more widely adopting Vaccine Therapy, would be doing themselves a benefit which would increase their control over many of the germ diseases (particularly those of a chronic nature) and incidentally add a large measure to their professional prestige—and their remuneration.

Today in the state of New Jersey within a figurative "stone's throw" of Philadelphia, with its surfeit of medical knowledge, our conversation with a physician was interrupted by the arrival of a patient, who we afterwards learned had had three successive boils, which were "brought to a head" and lanced as in years gone by. The patient in the meantime was receiving a tonic and suffering the tortures that only those who have had a real boil can thoroughly appreciate. On asking why a bacterin was not used, we were informed that "perhaps this will be the last of them. At any rate, maybe we will do that later."

Now it occurs to us as we sit in the train and eliminate these thoughts, how much better it would have been in this case (*and every other similar case*) to have given two or three doses of an emulsion of dead *Staphylococci*.

We must really throw off this cloak which hampers our freedom and make use of the knowledge which research has placed at our disposal, not occasionally, but *every time*.

To revert to our original subject. Any physician who considers himself competent to use strychnia or gelseminum or lachesis is equally able to learn to effectively use Vaccines.

As a matter of fact, Vaccines are far less harmful than they have been presumed to be.

We learned very recently of an interesting experience related by Dr. Timothy Leary of Boston, which we will give in his own words:

"In general infections Vaccines are harmless. This was indicated in a case in which, through error, 10 c.c. of *Staphylococcus pyogenes aureus* Vaccine containing 10,000,000,000 organisms were injected at one time as an initial dose, which is forty times the standard initial dose. No harm resulted. In a second case the same dose produced a temporary collapse with prompt response to heat and stimulation."

To close: Bacterial Vaccines are not dangerous—if rightly used. The average physician is passing by a splendid thing if he is not using these remedies as a routine.

The knowledge required to effectively use Vaccines is not hard to obtain, nor does it require more than a few minutes—perhaps an hour or so.

It may be that we are overstating matters—try it and see. Results count.

STATIC, COIL OR GENERATOR?

If the opinion of every individual was like that of every other we surmise that life would become very monotonous and our work very zestless. The inception and interchange of ideas is one of the greatest advantages which can be enjoyed.

That there is a wide difference of opinion regarding the relative value and efficiency of the static machine, coil and the interrupterless generator in X-Ray work is no mistake. In our experience it would almost seem that rarely are two opinions on this matter alike.

A short time ago we were astonished at the statement of an X-Ray operator of national repute: "Ten years from now there will

be no coils"—for the kind of work that happened to be under discussion. To make matters at once interesting and lively we propose to inaugurate a new department in our next issue. This will be called "The Forum" (unless a better title is in the meantime forthcoming) and the first subject for discussion in this department is succinctly expressed in the title of this editorial.

This will be the beginning of a series of red-hot discussions which will be of immense informative value to readers of *PHYSIOLOGIC THERAPEUTICS*. It is hoped that a lively interest may be evinced in this new departure and that interested readers will not hesitate to take part and suggest subjects for discussion in future issues.

A few points should be mentioned here to simplify our work:

1. Give your name and address.
2. Limit your arguments to 100 or 150 words. This may entail some rewriting on your part. Omit the frills. Write telegram style.
3. Give the names of the apparatus you now use or have used. They will be printed.

All communications may not be printed, but an attempt will be made to use an equal number for each side.

These communications should reach us before December tenth.

A NEW COURSE AT TEMPLE UNIVERSITY.

Our good friend, Dr. C. F. Taylor, of *The Medical World*, sent us a clipping from the *Philadelphia North American*, October 3, 1910, which is worthy of a place here. It serves to show very plainly "which way the wind is blowing."

Temple University has inaugurated a course of medical training said to be entirely unique among the medical schools of the world. The new course has to do with the methods of effecting cures and of developing the body to its highest efficiency without the use of drugs.

Dr. J. Madison Taylor, who this fall assumes a place on the faculty of Temple University, has been appointed adjunct professor to teach the new course. It is thought that the adoption of the course by Temple University will demonstrate to other medical schools the necessity of a separate and distinct course, dealing with the non-pharmaceutical treatment of disease of low vitality. Doctor Taylor has just returned from an extensive tour abroad, from which he brings much instructive data for his new course of lectures to Temple medical students.

"The purpose of the new course at Temple will be to dignify and systematize the various methods of treating patients without drugs," said Doctor Taylor last night. "This is the first course of its kind which has ever been established. As I have practiced medicine, the conviction grew upon me that medical students should be taught

in a systematic manner the many different ways to treat disease without using drugs.

"These matters are touched upon and referred to only incidentally in the medical schools now in the course of lectures on therapeutics or the science of healing or curing. But here the emphasis is all upon the method of curing by means of drugs. The thought is always the repair of something broken down or out of gear. The student is not made systematically to see or appreciate the many different methods by which disease can be eradicated or a person of low vitality be brought up to normal without using drugs to do it.

"Massage, exercise, mental suggestion, rest, diet, baths, electricity and light, these might be mentioned briefly as some of the ways that disease or lack of perfect health may be combated without the use of any drugs. They are but incidentally taught, and in a haphazard manner, in the medical schools now. Such matters are of the greatest importance in the proper practice of the medical profession, and it needs no explanation to point out why they are so important, for they speak for themselves.

"Yet the notions which doctors now have of these matters are widely divergent. They advise patients concerning them without having made a scientific study of them. It has been my conviction, born out of a long practice, that these subjects should be raised to the dignity of a separate course; that they should be dignified to their proper place of importance, and that medical students should think at least as much about them as of specific remedies for the various diseases.

"There are many ways to cure and to build up without using drugs, but physicians generally have not been taught enough about them, and have, consequently, been imperfectly trained in them. It is but right and reasonable that they should be dignified into a distinct course of medical study.

"A good example of what I mean can be had from the present haphazard notions in the profession concerning the subject of bathing. General principles of bathing are known to most doctors, but, the subject is not systematically and scientifically taught in the medical schools. The same applies to exercise and to many other topics which will be taken up in the new Temple course.

"I am especially interested in this course, because I hope that it will break the ground for the establishment of this kind of course in the curricula of the medical schools of the country. Certainly such a course should be there, for no course could be of greater practical benefit to the profession and to the public than one which teaches in a systematic manner and dignifies to their proper importance the ways of physical repair and betterment without the use of drugs."

We congratulate the Trustees of Temple University and wish them unbounded success. It would not surprise us at all if, within the coming year, we did not have the pleasure of printing something good from Dr. J. Madison Taylor's pen. We hope so.

TREATING SYPHILIS WITHOUT DRUGS.

To the well-informed physician a heading such as the above seems almost like a "scare head." "Impossible," says the reader. "Of all the diseases when drugs absolutely must be used syphilis is *the* one."

Yet we are in the days of startling things. Wright's Vaccines; diphtheria antitoxin; solid carbon di-oxide, and many other agencies which would have been laughed at by our fore-fathers are now in regular, routine daily use.

With the wonderful Ehrlich-Hata "606" the main topic of discussion in a hundred medical journals, and the astounding results obtained by its use already on record, one little statement by a country practitioner would be sadly in the minority. Still we gladly print it here and go further and add the story of how we obtained this article: Some months ago we received a letter from a friend in Fort Wayne, Ind., in which reference was made to the work of Doctor Kern in Wabash, Ind., and to several remarkable results obtained by him. We went down to see the Doctor, heard from his own lips some of his successes and secured a promise of a short statement at some future date. We publish it in this issue, and believe that it will at least prove food for thought.

We might make this an opportunity to add that one of our associate editors, Dr. Curran Pope, of Louisville, Ky., is compiling some figures and statements relating to the use of hydrotherapy in Syphilis. These will be published in an early issue, and, we have reason to believe, will also be somewhat thought-stimulating.

CRYMOTHERAPY.

The ever-increasing progress in the treatment of certain conditions by applications of carbon dioxide ice is stimulating quite a good deal of interest which is mirrored in the current medical literature.

To keep well to the fore, it has been deemed advisable to add another department to PHYSIOLOGIC THERAPEUTICS to cover this field.

This begins in this issue under the title "Crymotherapy." For brevity's sake, we have found a new word, a twin to "themotherapy" and a close relative to "cryoscopy."

It is to be hoped that this new departure will increase the value of this journal to its readers and open up still greater possibilities in the treatment of disease without drugs.

ORIGINAL ARTICLES

MECHANICAL READJUSTMENT IN MEDICINE

BY DR. RALPH KENDRICK SMITH, BOSTON, MASS.

Assistant Surgeon, Orthopedic Department, Massachusetts General Hospital, etc.

Professor Conn of the Wesleyan University declares that the living body is a machine. It must, therefore, necessarily follow that the mechanical treatment of this machine when it happens to be out of order should be no unimportant part of the work of the medical practitioner no matter what his school of practice may be.

Until recently orthopedics was quite a neglected specialty, but now, fortunately, it has invaded no inconsiderable part of the practice of medicine. This brief paper will not attempt to include a consideration of traditional orthopedic surgery, but is rather intended to apply only to those procedures which have recently been rationalized and adapted to an entirely new class of cases.

Bloodless surgery is replacing the knife in many other conditions than the hip-joint diseases made famous by Lorenz. Manipulation is certainly becoming the vogue today in many quarters. Ether manipulations for the freeing of ankylosed joints have been used for some years, but now many orthopedic men are doing much important work without recourse to anesthesia.

The Awakening as Evidenced in the Literature.

Dr. Albert Ehrenfried, in the Children's hospital of this city, found that club foot in infancy could be treated much more satisfactorily by manipulation and plaster casts than by the knife.

The department of orthopedic surgery of Harvard Medical School in an official summary of the treatment of infantile paralysis published in the *Boston Medical and Surgical Journal* last June, stated that "massage should be given the highest place in all stages of this affection."

Dr. Joel E. Goldthwaite, also of Boston, in an article recently published, said: "The human organism resembles in many ways a delicately balanced machine made up of many parts, each related to the others, and that which we call perfect health is simply correlation of all these many parts. All the visceral functions, as well as the high mental processes, require an adjustment of the organism as a whole. It is foolish, for instance, to treat the weakly child who stands with the shoulders drooping forward and with the abdomen relaxed, by simply giving tonics."

The modern treatment of spinal curvature as exemplified by Dr. Robert W. Lovett in his splendid clinic at the Children's hospital,

Boston, is a brilliant departure from tradition and should be carefully considered in connection with this subject.

Probably the most startlingly radical stand in medical therapeutics ever taken within the ranks of the medical profession was that announced this very year by Dr. Albert Abrams of San Francisco in his remarkable book, "Spondylotherapy." He says: "The subject of spinal therapeutics has received less attention from the medical profession than it deserves. The successful practice of spondylotherapy requires knowledge, observation and experience of the highest kind, as comparable to the best efforts in any other department of scientific medicine."

Another frank statement of excellent results by manual treatment by a well known authority was published in the *New York Medical Journal* by Dr. J. Madison Taylor of Philadelphia, who says: "If half as much scientific research had been expended on the principles governing manual treatment as upon pharmacology, the hand would be esteemed today on a par with drugs in accessibility and power."

In a recent issue of the *Boston Medical and Surgical Journal* Dr. L. T. Brown claimed that growing pains in children were usually caused by faulty mechanics of the body.

In London, the Doctors Cyriax practice a method of treating disease by exerting pressure upon the sympathetic nerves. They describe this very fully in the *New York Medical Journal*.

Definite Histologic Proof.

For six years Dr. Carl McConnell, of Chicago, and others, working under the auspices of the A. T. Still Research Institute, have been experimenting upon animals in order to produce scientific evidence of disease appearing in distant organs after vertebrae have been slightly displaced under ether. Microscopic examination of specimens taken from the organs of these animals seem to prove conclusively and in the usual scientific manner the theory that visceral disease is often caused by vertebral displacement. The logical treatment in these cases must be the reverse of this process, that is, replacement of the vertebrae.

Doctor McConnell thus comments on his microscopic findings at autopsy two months after the displacements:

"In the lesion itself we fail to see where there is any perceptible partial occlusion of the spinal foramen by the encroaching bony tissue in the great majority of cases. It is found that the permanent vertebral lesion is maintained by overstretched and damaged articular ligaments.

"Naturally the greatest interest centers in the microscopical findings of the nerves and blood vessels. The Marchi, Weigert-Pal, Wil-

liamson and Nissl methods show, without question, that the nervous structures of the spinal cord, the spinal nerve roots and their branches, and the sympathetics corresponding to the lesion are pathologically involved; while nervous tissues of normal animals, fixed, stained and mounted in the same material and at the same time, show no change. Various cell-groups in the gray matter are disturbed, some are more or less swollen, others partly atrophied, and a number normal (Williamson and Nissl's methods). Corresponding axone degeneration (beginning parenchymatous; Marchi, Donaggio and Weigert-Pal methods) is readily noted, and extending above and below the lesion.

"The changes found in the blood vessels are a highly interesting and elucidating study. The coats of arterioles, capillaries, veins and in some instances the arteries, are found deranged from the endothelial cells through the muscle fibres and the outer layer into the surrounding tissue. And in the walls through and into the surrounding tissues are found, in variable quantities, blood corpuscles enmeshed. From an escape of blood-plasma to leucocytal invasion, diapedesis and hemorrhagic foci, the pathologic picture is evident.

"The hyperemia in the spinal cord is pronounced, especially in the gray matter. Throughout the posterior horns, and the tips and mesial sides of the anterior horns are the areas most disturbed, but not by any means exclusively. It would appear that the damage inceptively and primarily would be due to the blockage of the afferent sensory impulses of the joint structure and encompassing tissues, followed by reflex segmental disturbance to the efferent vasco-motor, motor and other fibers.

"The effect upon stomach and intestines is marked. Clinical analysis shows that secretory, motor and digestive powers are altered and lessened.

"The kidney changes are very interesting. These have taken place when the lesion was produced in the section comprising the eleventh, twelfth and thirteenth dorsals only. It would seem without question that the vaso-motors are principally at fault—that is, the initial nervous lesion affecting the kidney is by way of these fibers. The disturbance is a vascular one, resulting in congestion and a typical hemorrhagic infiltration. The nephritis, of course, is acute and the urinary findings are characteristic of such. The urinary changes are commonly manifested the third week, sometimes the fourth and fifth. In two cases correction of the lesion was attempted, and in 10 and 15 days respectively the urine was negative and remained so. An interesting point to note is that the vascular disorder seemed to occur first in the glomeruli, and between the glomerulus and capsule; then throughout the tubules. There is probably an anatomical reason for this, due to the vessels' distribution and ending in the tuft. The liver

and spleen in a number of instances were found congested. In two cases the pancreas was found acutely disordered. The urinalysis after the fourth day showed a moderate amount of sugar. The adrenals in one case of lesion of the lower dorsal showed a small amount of congestion. A parenchymatous goiter was definitely produced in two of the animals."

Such work as this places the art of mechanical readjustment upon a firm and unquestioned scientific basis. Manipulative therapeutics is coming into its own and taking the prominent place in medicine which rightly belongs to it.

755 Boylston Street.

THE EFFECTS OF THE X-RAY ON THE OPERATOR.

BY J. N. SCOTT, M. D., KANSAS CITY, MO.

Associate Professor, Electro Therapy, Medical Department, University of Kansas.

The X-ray is different in its therapeutic effect from any other agent used in medicine. If a patient receive repeated doses of morphine, arsenic, etc., the more they take the more the system will accommodate and the body builds up a resistant power against the effects of these poisons. Not so with the X-ray, however, for the more ray that a patient or operator receives the less it will take to influence the system, exposing a patient or operator a short time each day, over a long period. Instead of building up a resistance to its effects by continued exposure, this resistance is gradually lessened.

Some Personal Experiences.

I commenced to use the X-ray in 1897. For four years I worked around the active tubes every day and never received a sufficient dosage to produce an acute burn, but at the end of this time I noticed that the skin on the back of my hands commenced to discolor, thicken and become sensitive to heat and cold. I was accustomed to use the back of my hand in front of the fluoroscope as an index to determine how the tube was working. About this time a number of operators were being affected. We were warned that it would be a good policy when operating the tube to remain back of the anode and not expose our selves to the active part of the tube. I heeded this warning and my conditions remained stationary for about six months, when I noticed that my nails were beginning to crack and my hands were getting a little worse. I then had a steel screen constructed, one-eighth of an inch thick, three feet wide and six and one-half feet high, with a glass window 4x6 inches. I remained back of this screen a good part of the time, but still continued to make fluoroscopic examinations when it was necessary.

I continued to use this screen as a protection for another six months, when I found myself becoming nervous, having indefinite pains in the abdomen and occasionally vomiting and feeling bad generally. I tried to make myself believe that I was a neurasthenic, but finally became convinced that many of the symptoms were due to the X-ray. At the same time my nails were atrophying some and the thickening of the hands still increasing. I then had a metallic box constructed with an adjustable opening in the side and bottom for the X-ray to pass through. This box was large enough so that the tube could be placed inside of it and unless the vacuum was too high the current would pass through the tube and not jump to the box. I had this box suspended from the ceiling by pulleys and counterweights by means of which I could raise or lower it over a patient. I still continued to use the fluoroscope for diagnostic purposes, but remained back of the steel screen when it was not necessary to adjust the tube, etc. In this way I had the protection of the metal in the box and the steel screen most of the time and was really exposed to the X-ray but a short time each day. In spite of these precautions I developed an aching in the bones and pain of short duration in different nerves, which I supposed was neuritis. And in talking to a number of older operators both in this country and in Europe, I find that they have the same symptoms and, like myself, believed them due to the X-ray. I continued using this protection for several years. Finally several necrotic places developed on my hands, but I was always able to have them heal in from two to four weeks. Later I became so susceptible to the ray that I gave up using the fluoroscope entirely, even with the aid of the heavy glass over the screen, and wearing special rubber gloves with metals, such as lead, incorporated in the rubber and heavy lead glasses for the eyes. I found that remaining in the field of the active X-ray tube for one minute would affect me more than exposing myself hours would a few years before. I then obtained assistance to operate the apparatus and I have not seen the X-ray tube in operation for several years.

In applying treatments I examine the patient, give the time of exposure, penetrability of the ray and area to be exposed to the assistant who applies the ray. I remain in a room some distance from the X-ray room, separated from it by heavy walls which are covered with steel. My condition is about the same that it was three or four years ago, but my hands have not improved materially.

The Removal of Cutaneous Hypertrophies.

I have tried many different methods to remove the excessive growth of epithelium in places on my hands. I have had these spots removed by electrolysis, cauterization, salicylic acid, excision, burning

with nitric acid, formalin, carbonic acid snow, etc. They have nearly always returned except when removed by the application of formalin. With this I have succeeded in removing several which did not return.

On my trip abroad last summer I talked with the roentgenologists in the various hospitals of London, Paris, Vienna and Berlin and I failed to find anyone who had had a severe attack of the chronic X-ray dermatitis with areas of thickening of the epithelium to have had them removed permanently by any process. In mild cases excision with skin grafting had given very good results, but if the lesions were extensive, part of the grafts would not take and the operation would have to be repeated again and again.

The X-ray in small doses is a stimulant to all structures. If a larger dose is employed than will produce stimulation, a local alterative effect is produced. That is the tissue to which the X-ray is applied is destroyed, but new tissues form as rapidly as destruction takes place, and if a still larger dose is employed, it will produce a necrosis or so-called burn, where the tissues are destroyed more rapidly than they can repair.

Personal Conclusions.

I believe it is possible for a physician to use the X-ray continually over any number of years without its producing harmful effects on him, if the proper protection is used so that he does not obtain sufficient ray to reduce his normal resistance to it, but just as soon as any operator finds the chronic effects of the X-ray evident on himself, it is a symptom that his resistance to the ray is lowered and he should take greater precautions.

I do not even think it advisable for a person whose resistance has thus become lowered, to go into a room immediately following the operation of an X-ray tube, as I believe there are emanations given off from the tube for some time after the current has ceased to pass through it. I do not believe that any operator should make a routine practice of using the fluoroscope even if he does wear protecting gloves, apron, lead glasses for the eyes and lead glass over the fluoroscopic screen. I believe that he still receives sufficient ray so that eventually his resistance will be lowered.

I believe that every operator should have sufficient protection that he can carry a small photographic plate in his pocket for a half a day and upon development find that it is not fogged.

With all the warnings that have been given, there are too many enthusiastic operators who are exposing themselves unduly to the ray. These persons should benefit by the experiences and sufferings of others. There was a day when we did not know about these cumulative effects of the ray and we only feared the so-called "burn," but that is mild in comparison to the chronic effects of the ray.

There are very few of the men who used the X-ray ten or twelve years ago who were not affected by it. There are quite a number dead; many have lost fingers or hands, and others are physical wrecks. Even when persons have remained away from the X-ray four or five years, their condition is not improved materially.

For the aching and pain in the affected members, such as the hands, either a continual douche of water as hot as can be comfortably applied, or allow them to remain in a hot normal salt solution, will generally relieve the pain to a great extent. Drugs, such as antipyrin, acetanilid, hyoscyamin, morphine, etc., do not afford much relief.

THE USE OF SOLID CARBON DIOXIDE.

BY J. HARVEY TODD, M. D., TORONTO, ONTARIO.

Röntgenologist Toronto General Hospital, Etc.

To Pusey of Chicago belongs the honor of introducing to the realm of medicine the therapeutic virtues of solid carbon dioxide. Since its introduction three or four years ago CO_2 ice (or snow) has attracted world-wide attention because of its almost miraculous possibilities.

Dr. E. Reginald Morton of London in a recent communication states that "In solid carbon dioxide I consider we have the most important therapeutic discovery of recent times, not excluding that remarkable substance, radium. Carbon dioxide is both plentiful and cheap, the time of application is a matter of seconds, the latent period before the reaction sets in is one of minutes, the reaction itself is a question of hours, and the whole process is completed in a small number of days."

The application of carbon dioxide ice and the subsequent reaction is almost painless. Its use requires neither local nor general anesthetic not even in extremely nervous individuals or children. Here we have an extremely efficient remedy. In suitable cases it seldom if ever fails to accomplish satisfactory results, unless the technique of its use happens to be at fault.

The Physics of This Method.

Without a doubt the therapeutic effects produced by solid CO_2 are due to its intense coldness. The temperature has been estimated to be as low as -72 degrees C. In all probability any other of the gases which can be solidified would offer similar results; but the place of CO_2 will never be usurped simply because of its convenience, cheapness and effectiveness.

The physics of the use of this remedy are not difficult to understand. During an application the tissues are cooled by giving up their heat to the crayon; they are quickly blanched, becoming frozen and rigid, while the individual cells are hard and firm. Knowing, as we do, that water and substances containing water undergo expansion progressively as the temperature falls below 3 or 4 degrees Centigrade, we may, and rightly, assume that the individual cells in the tissues treated also expand so that the cell walls and nuclei are fractured or damaged in such a way as to bring about an immediate and intense reaction. This is just what happens here.

Means of Making Crayons.

There are several methods at present in vogue for the preparation of solid carbon dioxide in a convenient and suitable form. One very simple but equally crude procedure is to take a towel and fold it lengthwise three or four times (according to the desired length of the crayon). The towel is now rolled tightly around a small cylinder, ruler or broom handle. The handle is withdrawn and a hollow porous cylinder is formed, one end secured plugged with a cork or other convenient stopper. The other end is slipped over the end of the outlet valve of the CO₂ cylinder and a towel carefully bandaged around and over both ends so as to make everything tight. •

When this is done the valve is slowly opened and the cylindrical space is soon filled with a crayon of loose crystals or snow.

Another plan is to hold a towel or piece of baize in one hand loosely over the cylinder outlet and, manipulating the valve with the other hand, collect a small quantity of the soft, fluffy snow in the cloth. This is then molded by compressing it into a suitable piece of metal tubing by a rammer made for that purpose.

The best and most satisfactory plan is to use an ice-crayon mold made especially for this purpose. This is essentially a strong metal tube, threaded at the one end to receive the end of the cylinder outlet valve and the other to attach to the mold. The preparation is simplicity itself. The liquid CO₂ is allowed to slowly escape into the metal cylinder or crayon until it is filled with snow, which is easily compressed by a screw-plunger. The mold is pointed and hard and on removal is ready for use. In size it varies from one-half to one inch and from two to three inches in length.

A word or two about CO₂ cylinders might not be amiss. The ordinary carbonic acid cylinder as supplied to soda fountains is quite easy to work with and absolutely safe to have in the office, if not exposed to high temperatures. (Do not keep it near the radiator or steam pipe!)

The average cylinder contains from fifteen to twenty pounds of

liquid CO₂, at a pressure of from 900 to 1,000 pounds. Special cylinders are made containing 8 pounds, which is a sufficient supply. It is used either inverted or inclined so that the liquid covers the inner aspect of the outlet valve.

With the growth of the immense soda trade carbon dioxide has become one of the commonest articles of commerce. It can be obtained in practically every city or village, at a cost that is purely nominal. A large-size cylinder will suffice for many treatments and the cost of material is very small. Even this cost may be reduced by arranging for several seances close together and using one crayon three or four times.

Application and Dosage.

The dosage of solid carbon dioxide varies naturally with the lesion to be treated. The degree of freezing depends on two factors: The length of the application and the pressure used. This latter should be sufficient to arrest the circulation and quickly render the part anemic. The more thoroughly this is done the shorter will be the time of exposure. The duration of the application varies from twenty to sixty seconds. Applications to lesions in close proximity with bones should be short, and care must be taken not to freeze too large an area at one sitting.

After a treatment it will be noted that a depression is formed where the crayon was applied. This persists from two to three times the length of the application. The reaction begins almost immediately, and in a few moments the treated area begins to swell perceptibly. A wheal soon forms and within an hour or so a vesicle appears. If the application has been correctly made the subsequent changes are simply those of aseptic, plastic inflammation, with no gross destruction of tissue. Necrosis is never found save when an application has been made too long.

The only after treatment necessary is to prevent septic contamination, which would, of course, not only prolong healing but also tend to produce an unsightly scar. The vesicle may be pricked with a sterile needle and the fluid evacuated. The only dressing that may be needed is a little boric ointment, and that only while the vesicle is discharging.

Within a few days a crust forms. This must be left severely alone and allowed to separate of its own accord. This usually happens within ten days or two weeks. When this occurs a soft, pliable and elastic scar with a light pink color is left. This very quickly becomes almost unnoticeable.

A Wide Range of Usefulness.

The results that have been attained in the treatment of numerous skin lesions are really remarkable, and too much praise cannot be given to those who have perfected such a valuable addition to our armamentarium. In nevi one application only is generally successful; port wine stains require from two to three sittings; lupus vulgaris, moles, warts, epithelioma, keloids and other kindred conditions all readily react to the curative powers of solid carbon dioxide.

Gunpowder stains are removed better by the ice-crayon than by almost any other method. Gottheil says: "In lupus erythematosus it surpasses all other forms of treatment. There is no agent so effective, so manageable and so painless as solid carbon dioxide." Truly both dermatologist and general practitioner will find in this a remedy with an ever-broadening range of usefulness.

163 College Street.

THE TREATMENT OF SYPHILIS WITHOUT DRUGS.

BY AARON KERN, M. D., WABASH, INDIANA.

The treatment of syphilis with measures other than the usual medicinal remedies has given me more satisfactory results than the usual, well-known methods described in the best text-books of the day. Needless to say it is infinitely more pleasing to the patient.

For the past few years I have been using the following outline as a routine in the treatment of specific disease irrespective of the stage presenting or the duration of the disease.

Each patient receives a course of twenty-one sweat baths in a hot-air oven. These baths are given daily and the patient is left in the bath until the body-temperature has reached 100 degrees F., after which he is placed in a needle-shower at 100 degrees and left for three to five minutes. The water is then gradually cooled to 60 degrees and kept at that temperature for twenty to sixty seconds. The patient dries himself and rests for a short time before leaving the office.

In addition to this each patient takes oxyoline (nascent ozone inhalations) treatments for forty-five minutes morning and evening. The patient's weight is carefully recorded and should there be any noticeable loss, the length of the treatment is decreased to thirty minutes at a sitting until he again gains in weight, when the length of treatment is increased to forty-five minutes as before. After six weeks of this treatment the inhalation treatments are reduced to once a day and this is kept up for six or seven months.

I have yet to find a case of syphilis whom I have treated who has had a recurrence of the disease in any form whatever. I have never found it necessary to resort to medication of any kind, irrespective of the condition of the patient. They have come to the office with pustular eruptions, chancres and the other usual syphilitic eruptions and in from two to four weeks all traces have disappeared.

The advantages of this form of treatment which seem very plain to me may be summarized as follows:

1. The method is clean and far from disagreeable.
 2. Instead of burdening the patient with a poison, the appetite improves and the weight increases, it builds up their vital resistance.
 3. There are no inconveniences to fear from possible over-dosage.
 4. The length of time required for a cure is shorter than with the routine mercury-potassium-iodide method in general use today.
- 26 Maple Street.

THE POSSIBILITIES OF SPINAL ELECTROTHERAPY AND HYDROTHERAPY.

BY MORRIS HALE, M. D., HOT SPRINGS, ARK.

For more than forty-five years I have been proving the efficiency of the treatment of a large class of diseases by influencing the vaso-motor agencies by cold or heat and positive or negative electricity, alone or combined.

The complications due to disturbances of the vaso-motor equilibrium are of two kinds: Those resulting from an excess of vaso-motor activity and those due to vaso-motor paresis or inactivity. The former class, which includes a number of very common conditions, is, in my estimation, best treated by the application of cold or the positive current, together or separately, over one or more segments of the spinal cord, nerve centers and ganglia on either side of the spine. Without a doubt these centers have a decided and direct influence upon the peripheral circulation, being functionally related to some part of the body or its extremities.

The treatment may be applied over the whole length of the spinal column or to localized areas dependent upon the emergency under consideration. By the application of either ice or positive electricity, or both, the blood circulation and nerve energy in the spinal cord is diminished and the circulation in the visceral cavities and their organs increased. This procedure also gives warmth to the body and extremities, and causes a healthful equalization of the circulation throughout the whole system.

Here follows a brief, summarized statement of my idea of the principles involved by this method of treatment and its possibilities.

The chief function of the sympathetic ganglia consists in the regulation of the diameters of the blood vessels throughout the body.

When these ganglia are in a state of maximum hyperemia, the nervous impulses from them to the muscular coats of the arteries and arterioles to which they are severally related, stimulate them so excessively that a condition of tonic spasm is often induced, which is often so intense as to shut off a large proportion of the blood in the peripheral arteries.

Cold or the positive current applied along the spine will subdue cramps or excessive tension of both the voluntary and the involuntary muscles, will lessen sensibility, diminish secretion and, while increasing within certain limits the general circulation and bodily heat, is capable by prolonged use of lessening cellular nutrition.

When the spinal cord is in a state of hyperemia, cramps of the involuntary muscles surrounding the alimentary canal, cramps or even convulsions of the voluntary muscles, excessive glandular activity and excessive sensibility (hyperesthesia) are likely to ensue.

Sensibility can be lessened and pain abolished by exercising a sedative influence on the spinal cord by the application of ice or positive electricity, or both simultaneously.

Disorders of the voluntary muscles of a spasmodic or convulsive character are quickly and powerfully counteracted by ice or positive electricity applied to the spinal column.

Disorders of the involuntary muscular structure consisting of excessive contractions or tonic spasm, as well as of morbidly excessive relaxation of the same structures are controllable to an astonishing extent by application of ice or positive electricity to the spine.

Disorderly and excessive action of glands or glandular surfaces may also be corrected by the exertion of these sedative influences over the nerve centers functionally related to them.

The idea as well as the practice of lessening secretion by diminishing the circulation in the related nerve centers is not generally appreciated by the profession and I desire here to impress the following facts: Morbidly excessive sweating, bronchorrhea, the excessive action of the alimentary mucosa, constituting a common cause of diarrhea, excessive action of the kidneys and spermatorrhea have been restrained over and over again by the use of cold or electricity properly applied to the appropriate part of the spine.

The fact that excessive secretion of urine may be arrested by the application of a spinal ice bag or electricity has not yet been mentioned in the literature by anyone besides myself; but, nevertheless, it is a fact as real as any of those cases which have been shown to others

and in proof of which I am able to offer the testimony of several medical witnesses. I have also repeatedly demonstrated that this method exerts a valuable restraining power over the morbidly excessive secretion of the spermatic glands.

BACTERIAL THERAPY.

BY W. W. ROOT, B. S., M. D., DETROIT, MICH.

When the word "Vaccine" is used the intelligent reader, unless he has special training, thinks only of the virus contained in pustules obtained from the heifer suffering from cow-pox and used in the ordinary process of vaccination.

If cow-pox is, as believed, but smallpox modified by passage through animals, we have here a method of attenuation. Other methods of attenuation are by heat, cold, light, chemical, electrical or mechanical vaccine is analogous to cow-pox vaccine in that both are attenuated, the bacterial vaccine is but a suspension of dead germs and their products. The difference in their action is that in cow-pox, as also in anthrax and in blackleg, we have a true immunity produced by the actual disease itself in an attenuated form, while in the use of bacterial vaccines the good results are produced through a heightened phagocytosis.

After Koch's great discovery of the cause of consumption in 1882; the use of this causative germ in the treatment of the disease was naturally suggested and we now have the various tuberculins, all of which consist either of the dead germs or of the toxins which arise from them. Whatever terms are employed, we have in them, therefore, essentially the same idea as with bacterial vaccines. In fact both the tuberculins, B.E. and T.R., are suspensions of ground up bacilli and are therefore true bacterial vaccines.

We are too prone to multiply terms as shown by such names as consumption, tuberculosis, phthisis, wasting disease, scrofula, Pott's disease, white abscess, chronic caseous pneumonia, miliary tubercle, basilar meningitis and others, all of which have one etiological factor.

Language too frequently conceals instead of revealing thought and it is sincerely to be hoped in the future that a much more natural and simple nomenclature will obtain and one which will show the relationship between facts obviously related to each other.

To Sir A. E. Wright of London, we owe a profound debt for the impetus he has given to the use of killed bacteria for therapeutic purposes, including the rational indications for treatment and a suit-

able table of dosage. He has recently published an admirable review of the subject, which should be read by all who are interested in the newer therapy.

Bacterial vaccines may be specifically defined as suspensions of dead bacteria in physiological salt solution intended for therapeutic use. They are commonly made by growing the germs on inclined agar for 24 hours and emulsifying in physiological salt solution. They are then killed by heating at 55° or 60°C. for fifteen minutes to one hour, depending upon the germ, after which they are diluted to a definite strength with the salt solution, preserved by the addition of 0.2 per cent of trikresol or lysol or 0.5 per cent of carbolic acid, and tested by injection into animals and by attempted growth in nutrient culture media.

Standardizing the Vaccine.

The strength of a vaccine is determined by counting the number of germs in a cubic centimeter. For this purpose equal volumes of fresh normal blood and the vaccine are diluted with two or three parts of physiological salt solution and spread out as a thin film on a slide and suitably stained. The number of bacteria and of red corpuscles in a certain area are counted under the microscope and the ratio of red blood cells to bacteria is noted. Assuming that there are five thousand million red cells in a cubic centimeter it follows that the number of red cells counted is to the number of bacteria counted as five thousand million is to the number of germs per cubic centimeter.

In making bacterial vaccines the germs may be either cultivated from the patient's own disease process, in which case such vaccines are called *personal* or *autogenous*, or they may be obtained from previous cases in which case they are called *stock vaccines*.

Autogenous vs. Stock Vaccines.

Stock vaccines can be kept on hand and administered without delay to the patient upon his first visit to the physician, whereas personal vaccines require several days to prepare. Personal vaccines are believed to be more efficacious than stock vaccines since they are presumably more exactly suited to the particular patient, although quite as satisfactory results may be observed in these very cases from the use of stock vaccines. With those who prefer the autogenous vaccines the treatment may well be begun with stock vaccines and finished, if need be, with personal vaccines.

Practically, personal vaccines are impossible in gonorrhea and tuberculosis owing to the difficulties encountered in growing the germs, and are usually unnecessary in staphylococcus infections because the stock vaccines do quite as well in most cases. In many

other infections the personal vaccines may be better, owing to the variety of strains encountered. On the other hand stock vaccines, where prepared in a reputable laboratory, are fully tested for both potency and safety including the test for tetanus as per the regulations of the U. S. Marine Hospital Service. All this takes fully a month and in waiting so long for personal vaccines the patient is thus likely to suffer for the treatment when he most needs it or to no longer require such treatment when it is ready. Furthermore, stock vaccines appeal to the general practitioner since he has neither the time nor the necessary apparatus to make and properly test personal vaccines.

Vaccines and their Indications.

Among the vaccines used may be mentioned:

Staphylococcus.—This is administered as albus, aureus, citreus and combined, the last being most popular. *Staphylococcus* vaccine is indicated in the treatment of boils, carbuncles, osteomyelitis, psoas abscess, certain fistulae and chronic discharges, in secondary infection from cases of acne and in general where a staphylococcus infection is present. A safe beginning dose contains 100,000,000 bacteria, to be raised at intervals of from four to eight days as the resistance of the patient increases.

Streptococcus.—In localized forms of streptococcus infection the results have been most encouraging. It has also been used with marked success in certain cases of erysipelas sometimes combined with the anti-streptococcic serum. We should logically expect that it would be suitable in the treatment of scarlet fever but the reports do not seem to fully support this assumption. Acute rheumatism, if caused by the "*diplococcus rheumaticus*" of Payne and Boynton should be amenable to this vaccine.²³

Gonococcus.—This has been used in some acute cases with success but its value has been mostly shown in gonorrheal rheumatism, gleet and other chronic results of injection by the gonococcus. Dosage may begin with 5,000,000 and may run as high as 1,000,000,000.

Typhoid.—As a remedial agent the value of this vaccine remains to be demonstrated, but as a prophylactor it has proven its value in the English South African campaign, in the American army and elsewhere.

Pneumococcus.—T. Leary of Boston has done work of value with this vaccine, but the outlook is, at present, not at all encouraging.

Colon.—Good results have been reported from vaccines prepared from the bacillus coli communis in cases where this germ was the etiological factor.

R. W. Allen has given four different germs as causative organisms

in 42 cases of nasal catarrh.⁴ He also states⁵ that of 50 cases in an epidemic of common colds, which occurred early in 1909, 90% were due to the pneumococcus, either alone or complicated by the *M. catarrhalis* or *M. paratetragenus* or by both. In three cases the *B. influenzae* was present, once alone, twice associated with the pneumococcus. "Common colds" which are usually a localized infection of the upper air passages have been shown by him to be amenable to vaccine therapy.^{6, 7, 8}

Carmalt-Jones claims to have treated bronchial asthma successfully with a specific vaccine.⁹

Pyæmia caused by the bacillus *pyocyaneus* may also be successfully treated with a vaccine.¹⁰ The list might be increased at length but these are sufficient illustrations to show the extent to which vaccine therapy is likely to be applied in the future.

• Usual Administration.

Bacterial vaccines are best given hypodermically, and the site may conveniently be the side, back or upper arm, the usual aseptic precautions in administration being observed. The dosage must be carefully adjusted to the particular patient, as too large an injection may do serious harm. The orthodox method of oral administration has been tried but the results are not satisfactory or, as Wright well states, "The new wine of bacterial vaccines cannot, with impunity, be poured into the old bottles of ancient medicine."¹

Without doubt the doses and the intervals between them may best be determined by the opsonic index since, as Wright states, "in a large class of cases it is impossible within the short interval which normally elapses between one inoculation and another to tell by any clinical observation whether the preceding dose of vaccine has elicited a satisfactory immunizing response."¹ He admits, however, that he has "from the very outset recognized that vaccine therapy can in many cases be carried out with success without its aid."¹ The average busy physician has not the necessary technical skill, neither has he the time for such work and while in some cases he may have access to a clinical laboratory, this involves considerable additional expense so that all things considered, he must, in the great majority of cases, do the best he can from a careful study of the clinical symptoms or resort to other treatment.

Following the administration of a bacterial vaccine the opsonic index falls. This is due to a lessening of resistance caused by the toxin injected and is commonly accompanied by symptoms which are associated with a general lowering of vitality.

This falling of the opsonic index is called after Wright the

"negative phase" and is followed after a few hours to a few days by the "positive phase" or a rising of the opsonic index above the starting point, usually associated with increased phagocytosis and an increased vitality. The patient not infrequently can by his own feelings distinguish between these phases.

The vaccine is always administered during a positive phase, the negative phase each time being less pronounced than before. The system is thus stimulated to an increased production of opsonins with increasing phagocytosis and consequent general and local improvement.

Bacterial therapy demands definite and exact diagnosis. It cannot be expected that a specific remedy will be of much service save in specific cases. The doctor must be sure, for instance, before using a streptococcus vaccine, that streptococci are the invading organisms. The physician who makes use of this form of treatment must therefore be himself a bacteriologist or secure the services of one. From the high standards now required by our best institutions it may be confidently expected that their graduates will be fully equal to the demands which the newer therapy will impose upon them.

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SUGGESTIONS IN THE HYDROTHERAPY OF THREE ACUTE DISEASES.

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Aside from its use in the management of typhoid fever, hydrotherapy has as yet found small place in general practice. In fact we have been laboring under the erroneous impression that the only place for hydrotherapy is in the well-equipped institution. This common idea and the fact that for so long a time this valuable agent was in the hands of charlatans, is largely responsible for the meager knowl-

edge of its great usefulness in the management of the common acute diseases met in general practice.

At the present time when nearly every house is equipped with a modern bath-room and excellent facilities for the employment of hydriatic procedures are almost everywhere at hand, hydrotherapy should be placed side by side with drug therapy in the armamentarium of the up-to-date physician.

In my association with physicians I find them divided into two distinct classes, the very busy practitioner who frankly says: "I know, doctor, that your water, electricity and all the rest are all right, and that you can get better results than by the older way; but it is too much trouble, takes too much time and it is lots easier to write a prescription"; and the other class who are anxious to learn all they can and apply it as fast as it is learned.

Do we not owe it to our patients and ourselves to use the best measures possible in the cure of disease and the relief of suffering? Are not those who let the factors of time and trouble enter into the consideration, missing the greatest reward of the true physician—the satisfaction of having done his best?

Do not be misled into thinking that these non-drug methods are largely psychological in their effects. The exact physiological action of many of these agencies can be demonstrated as clearly as the action of digitalis or strychnine. Study them carefully, apply them judiciously, and you will find results possible that cannot be obtained with drugs alone.

In this connection I desire to mention a few practical points in the management of some of our common acute diseases.

Measles.

The physician will find that there is quite a prejudice among the laity against the employment of cold water in measles, but if this can be overcome he will find that it is of great service in making the patient more comfortable and in preventing complications.

If the temperature reaches 103 degrees F. a full bath at 85 to 90 degrees repeated every hour if necessary will produce very gratifying results. If there is objection on the part of the parents to the full bath, a sponge bath may be used.

In the more severe cases where marked nervous symptoms are present, it is well to place the patient in a half-bath at 95 degrees and pour several basins of water at 70 to 75 degrees over the back of the neck and shoulders, or dash water at 55 to 60 degrees against the dorsal spine for an instant.

The most frequent and dreaded complication of measles is broncho-pneumonia. One must watch carefully for the first signs of

this complication, for if taken in time it may be forestalled by the use of fomentations and compresses employed in connection with three daily full baths at 90 degrees reduced to 80 degrees and continued for five minutes.

Scarlet Fever.

In scarlatina we have a graver form of disease for which no specific has as yet been found. As in all other infectious diseases it is of the greatest importance to maintain the vital resistance of the body against the toxins. For this purpose rational hydrotherapy is of great service in its management.

In the first stages of this disease a full bath at 98 to 100 degrees will do much to relieve or prevent such nervous symptoms as convulsions, twitchings, etc. If the heart action is feeble the child may be placed in a half-bath at 90 to 100 degrees and several basins of water at 60 degrees poured over the shoulders and down the spine. This may be repeated hourly if necessary. Later when the disease is well developed, if the temperature keeps up to 103 degrees and the pulse ranges from 125 to 130, the sponge bath or the graduated bath should be employed. As patients with either measles or scarlatina do not bear the abstraction of heat well, short cool applications, not over five minutes, produce better results than more prolonged ones.

Nephritis is our dreaded complication in scarlatina, but when the proper hydiatic procedures have been employed from the first, the action of the heart is so well maintained that this complication is often prevented, or, if not prevented, brought to a favorable termination.

The proper employment of hydrotherapeutic measures forms one of our best means of controlling acute nephritis.

Entero-Colitis.

Entero-colitis is another disease in which the proper employment of hydrotherapeutic measures has done much to lower the mortality. Recognizing the bacterial origin of this disease, the first indication is to prevent further entrance of the offending bacteria. To this end the stomach should be given a complete rest for a while, and then the diet should be carefully regulated for some time. It is essential to remove from the digestive tract as many of the bacteria and as much of the fermenting material as possible. A thorough, non-irritating initial purge should be given to empty the upper bowel, then the lower bowel should be cleansed by a cool enema every eight or ten hours.

Check the diarrhea by a small, hot enema administered after each stool. In some cases the cold enema works better. The fomentation to the abdomen every three hours with the heating abdominal com-

press during the intervals, changed every twenty minutes, is a most excellent measure.

Prostration and exhaustion of the vital force is a marked symptom of this condition, and is undoubtedly caused by the intestinal poisons. The hydiatic measures which remove toxines and tend to prevent their formation are our most valuable agents in the control of this disease.

The graduated bath as a general measure is of great value. When used in connection with the cool effusion, it makes an efficient treatment for supporting the circulation. The wet-sheet pack is another measure of value in this condition.

Youth is not a matter of years,
but of spirit.

* * *

The man who never makes a
mistake is the man who never
does anything.

* * *

The Fixed Idea is the motive
power that has driven most men
to attainment—more plodders
than geniuses have reached emi-
nence—Herbert Kaufman.

* * *

To be alive in every part of our
being, to realize the possibilities
that are in us, to do all that we
can, to become all that we are
capable of becoming, this is the
aim of life.—Charles Wagner.

* * *

The men whom I have seen
succeed best in life have always
been cheerful and hopeful men,
who went about their business
with a smile on their faces, and
took the changes and chances of
this mortal life, facing smooth
and rough alike as it came.—
Charles Kingsley.

NOTEWORTHY EDITORIALS.

PHYSIOLOGIC THERAPEUTICS.

We have often wondered what impression it would have made on the active physician of three and more decades ago could he have had a glimpse of the present day interest of the profession in drugless therapy; we doubt very much if he would have felt that he could fraternize with those who hold views which are very common these days. Beyond a very limited knowledge and use of heat, water, electricity and dietetics, physiologic therapeutics, as at present understood, is a product of the past twenty-five years. It is proving itself a wonderful realm and they who allow themselves to wander therein are enchanted with its possibilities. Through the study of physiologic processes and of drugless means to encourage their normal action many men who are in excellent standing among their fellows have come to an almost entire abandonment of the use of drugs. We are far from ready to acknowledge that this abandonment of drugs will ever be complete, or that it is desirable, but we know that the profession is to be congratulated that it has reached a stage when the prescribing of drugs is but an incident rather than the prime factor in its calling. Slowly the public is coming to understand that a call from the physician does not of necessity mean one or more prescriptions, and that his bill cannot be reckoned by the prescriptions written. He is teaching them the importance of things other than drugs in the scheme of things healthwise and the time is not far distant when the man who is not well versed in all the various means to the end, health, other than as well as including drugs, will find himself behind the procession and wondering what has happened.

But the efficacy of drugs is just as real as it ever has been. Drug nihilism is a consequence of ignorance, of incomplete training in that very important branch of medical education. There must be a reversion on the part of the profession, a return of faith; stronger chairs in our schools in medicinal therapy are even a more crying need than is that for an extension of the work in non-medicinal therapy. It is not the fault of medical graduates that they do not know drugs, and consequently prescribe them with misgiving, they have been ready to learn but their time has been fully occupied otherwise and no strong courses have been offered them. A man who does not know his drugs cannot prescribe them effectively. The medical schools are not turning out men who know drugs. Other means in treatment are important, they should be well understood, but the present development of drugless therapy will not let it stand alone and we doubt if it ever will. There is a mutual dependence between the two and each has its own great importance; neither should be relegated to the background in the plan of medical education. The making of a proper diagnosis is an absolute essential to success, but it alone will not relieve the sufferer; arriving at an unquestionable diagnosis may please the physician, but it is mighty little good to the patient if that is the end of your effectiveness.

You may use drugs, you may use manipulation, or other means, but its up to you to do something and do it intelligently—Editorial in *The Medical Fortnightly*, Oct. 10, 1910.

THE EFFERVESCENT OXYGEN BATH.

The effervescent oxygen bath is rapidly taking the place of the effervescing carbonic acid bath, and very justly so. All of the good effects of the effervescent carbonic acid bath may be obtained by the effervescent oxygen bath, and without any of the ill effects. The form of oxygen bath first employed was of little value for the reason that water can be made to absorb only a small amount of oxygen, even under pressure, and when the pressure is removed the oxygen is immediately liberated. Carbonic acid gas, on the other hand, enters into chemical union with the water, and so is more slowly given off.

This difficulty has been overcome by the use of perborate of soda, NaBO_3 . The addition of water to this compound reduces it to the perborate of soda, Na BO_3 , with the production of a molecule of hydrogen dioxide, H_2O_2 . In order to induce this chemical reaction, what is known as a catalyzer is necessary. For this a compound of manganese is employed. The result when these compounds are placed together in water is the gradual liberation of oxygen, which appears in very minute bubbles. These bubbles of nascent oxygen accumulate on the skin and produce a peculiar stimulation of the cutaneous nerves. The stimulation of the skin may be increased by the addition of various chemical salts, as in the effervescent carbon dioxid bath. It should be noted, however, that the addition of the calcium and sodium salts to the bath has the effect to diminish the amount of oxygen liberated.

Winternitz recommends the bath especially for cases in which the blood-pressure is elevated. Lacquerer and Sarason consider the bath as an important addition to therapeutics. Both Lacquerer and Winternitz recommend the bath in various cardiac neuroses, especially tachycardia, neurasthenia, insomnia, and as a means of relieving cutaneous paresthesias. Winternitz considers the bath as contraindicated in cases of low blood-pressure.

The effervescent oxygen bath not only accomplishes everything that can be accomplished by the effervescent carbonic bath, but possesses the following very distinct advantages over the carbon dioxid bath:

1. The respiratory function of the skin is encouraged by the oxygen bath, whereas skin respiration is necessarily suspended in the carbon dioxid bath. The respiration of the skin is important. It amounts to one-fifteenth of the total respiratory function of the body. This is equivalent to half an hour's respiration each twenty-four hours. In a healthy individual, this would not be a matter of very serious moment for the short period usually occupied by a bath. But in the case of a patient suffering from cardiac insufficiency or asthma, with the blood already highly charged with carbon dioxid, the immersion of the body for fifteen or twenty minutes in an atmosphere of car-

bonic acid gas might work considerable injury. On the other hand, the function of the skin must be very considerably decreased by immersion of the body in water saturated with nascent oxygen. The process of respiration in the skin must be closely akin to that in the gills of a fish, and hence will naturally be more active in water than in the air.

2. In an effervescent carbonic acid bath the carbonic acid gas fumes arising from the bath are necessarily inhaled to a greater or less extent by the patient. This must be highly detrimental in a large proportion of cases in which this bath is indicated, and can be in no case beneficial. On the other hand, in the effervescent oxygen bath, there is constantly escaping from the water a volume of pure oxygen amounting to four or five gallons in the course of an ordinary bath. The inhalation of this oxygen could be detrimental in no case, and must be more or less beneficial in all cases, particularly in the cases of cardiac weakness with cyanosis in which the chemical effervescent bath is especially indicated.

Many enthusiastic reports of the beneficial effects of this bath have already been published by Winternitz, Sommer, Naumann, Biedert, and numerous others.—Editorial in *Good Health*, Aug. 1910.

X-RAYS AND CANCER.

It would seem as though a sufficient number and variety of tests have now been made of the value of X-rays in the treatment of cancer to admit of the formulation of some definite status of radio-therapy in this disease. The medical world, and the lay world, too, are anxious to know just what may be expected of this method of treatment, on which such high hopes have been staked, and a rational estimate of its possibilities would be a great advantage to both.

Every little while, from various quarters, we hear reports of cases of cancer being treated with X-rays, with varying degrees of success, and at first blush it appears difficult to weed out anything like an intelligent idea of their real significance. However, after making due allowance for the variation of circumstance incident to even the best established therapeutic agencies, the instances of X-ray cancer treatment appear to fall into two general classes, in which, with a tolerable degree of constancy, the efficacy of the treatment exhibits a parallel course with the differentiation of the two classes.

The two classes referred to are those of external and internal cancer—those in which the lesion is on the surface and those in which it is below the surface. Of these two groups it will be readily seen, from the reports at hand, that those of surface cancer yield the best, and indeed the only results from radio-therapy; from which it would be reasonable to conclude that the virtue of the rays depends upon the directness of their contact with the neoplasm. Whether this differentiation really depends upon the necessity of direct contact between the rays and the growth, without the intervention of intermediate tissues, or whether (as is probable) it lies in the fact that a more vigorous application of them is practicable when the growth is

on the surface, than can be safely made when other tissues have to be penetrated, the net practical result to the apeusis is the same, at least in the present state of our knowledge.

By just what process the X-rays check the development of the cancerous tissue has not, we believe, been positively determined. It can hardly be determined until we have more definite knowledge of the precise nature of both the rays and of the carcinoma cells. It is, of course, well recognized that, to a more or less extent, the rays have a retarding effect upon all organic tissues—a condition which has interfered more than any other with their employment in therapeutics—and it is interesting to note that this effect seems to be in inverse ratio to the specialization of the tissue, their most marked inhibitive influence being exerted in the case of such embryo cells as are represented in low types of neoplasms. Their disastrous effects upon the reproductive cells are in direct accord with this apparent ratio.

Under present conditions, then, it may fairly be concluded that in cases of superficial cancer the X-ray treatment may be reasonably expected to yield promising results, especially in those instances (such as carcinoma and sarcoma of the breast) where it can be applied with the least involvement of surrounding tissues. But in cases of internal cancer, particularly where a considerable quantity of more or less elementary tissue has to be penetrated, the present outlook in radiotherapy must limit itself to the advantages of the X-ray as an accessory to the knife, either before or after the operation, or both.—Editorial in *The Medical Brief*, Sept. 1910.

DIETETICS AGAIN.

We have frequently adverted to the subject of dietetics in these columns and again desire to draw the attention of the profession to this most important branch of practical therapy. The longer indeed we are engaged in the practice of medicine the more we come to realize to be true what Haig says in his "Diet and Exercise," to-wit, that probably 90 per cent of disease can be traced to avoidable errors in diet. This estimate may, it is true, seem too high and entirely unwarranted by the self-evident and apparent experiences in medical practice; but a closer review of the subject and a more diligent inquiry into the causation of disease will undoubtedly lead us to believe that the children of the next generation or two ought to be more exempt from disease than the men and women of the present century.

While it is generally agreed that the dietetic factor is a very important one in the causation of disease, its true importance in pathology is lost sight of for various reasons and conditions. The first of these reasons consists in the fact that food materials are thought not to possess certain definite and specific values. We assert that many articles of food possess, not alone reconstructive qualities by which the various tissues of the body are enabled to grow and sustain physiological functions, but also that many, if not all, foods possess certain curative properties by which functions are stimulated and waste is eliminated.

The second obstacle in the way of comprehending the diet value of food in disease has reference to the lack of material in the way of experiment, both clinical and laboratorial. Instead of emphasizing the chemical constituents of food, more attention ought to be directed upon clinical effects not alone of single foods but also of various foods in proper and improper combination.

Another obstacle in the way of determining the food factor in disease consists in the fact that the conception of food in the minds of most men has reference to a substance or substances that pre-eminently sustain life. It very seldom occurs to most of us that food materials are the most potent factors in the production of disease, by destroying or impeding cell life, by obstructing the small arterioles and tubules of the tissues, by producing too much heat, and by depositing molecular constituent of the xanthin and uric acid bodies.

The idea that the food possesses even such a limited share in impairing health and producing disease is gradually gaining ground both in the United States and abroad and various experimenters are now directing their inquiries toward the physiological therapy of common diseases in the hope of finding a more scientific and rational system of treatment. We are indeed glad to see these few glimmerings of light upon a subject that has been long neglected, and we are safe in saying that the time is not far distant when the practice of medicine will be more complete, definite and satisfactory—Editorial in *Lancet-Clinic*, Oct. 22, 1910.

INDUCED HYPEREMIA IN TREATMENT.

There continues to be a rather rich literature on the employment of Bier's method of induced hyperemia in the treatment of various conditions, much of which fails to be of practical value in that it does not go sufficiently into details as to indications and methods of application. A limited experience has not made us so enthusiastic over the method as are many who are employing it more extensively. Notably among those who are finding in it a uniformly reliable agent is Daniel, who states* that he has been in his own practice so uniformly successful with this method of treatment that the unsatisfactory results often following its adoption when relegated to house surgeons and practitioners must be due to want of familiarity with the technic and peculiarities attendant upon this plan of treatment. As the success of the treatment practically depends upon ascertaining first the exact degree of hyperemia suited to each individual case, secondly the maximum duration of time the hyperemia should be maintained, it follows that a very close watch must be kept upon every case during the earlier applications of the bandage or suction glass—the failure to observe the first effects of the treatment on the individual case is the most usual cause of non-success. The second great cause of failure depends upon the almost universal belief in the shibboleth that the vascular phenomena of inflammation are evil, and anything which tends to produce or increase any of the signs of inflammation cannot be good. Unfortunately, pathologists still include in these phenomena the stages of stasis and thrombosis, and thus perpetuate this erroneous view that all the stages of inflammation are

evil and to be combated at all costs. On the contrary, the first three stages are most essential, and without them resistance to infection is absent; they should be styled hyperemia, and are manifest clinically by redness, heat, swelling, and almost every method of treatment which produces these clinical signs is used successfully in the treatment of disease—fomentations, blisters, friction, massage movements.

The four methods of treatment adopted by Bier, when properly applied, result in this trio of symptoms, and without going further into the question whether the congestion ultimately attained by the bandage and suction glass is, or is not arterial, stasis in the blood-flow must never result. The modes of application are: 1. By graduated constriction by means of an elastic bandage. 2. By intermittent suction of specially constructed cupping glasses. 3. By the use of hot air. 4. By Kuhn's mask (in pulmonary phthisis). The author devotes twelve pages to the indications for use, the apparatus, and the technic.—*Editorial in *Gaillard's Southern Medicine*.

THE ACTION OF THE X-RAY IN LARGE AND SMALL DOSES.

Since the discovery of the x -rays and their application to therapeutics, many and various results have been obtained from their use, results often quite contradictory in character, the explanations of which have at times been distinctly puzzling. It has been difficult in many instances to explain why in one case the use of the rays would cause degeneration and at others regeneration of similar tissues; why, for example, in one patient superfluous hair would be removed and in another the use of the rays on a smooth skin would result in a profuse hirsute adornment. In recent years, however, means have been devised of regulating the dose of the x -rays and of estimating in units the amount of radiation being administered in each case. This has made the study of the action more accurate and has enabled the illumination of several obscure points. In the *Berliner klinische Wochenschrift* for May 23, 1910, H. E. Schmidt reports a small series of experiments into the effect of various doses of the x -ray upon cell growth. Having soaked a number of beans in water for six hours he treated the different beans with different doses of the rays, and then planted them. His results were quite uniform and demonstrated two points of interest. Whereas those beans which were treated with large doses of the rays were partially or completely inhibited in their growth, as compared to untreated control beans, those which received very small doses were distinctly stimulated; not only were the plants larger and more vigorous, but the flowers were larger and the resulting crop of beans better. From these findings Schmidt suggests that the same phenomenon may apply to animal cells, and experiments which he carried out on an ulcer on the arm suggest that this is the case. If this be so it is evident that in treating conditions in which healing and proliferation are desired, as a sluggish ulcer, very small doses of the x -ray should be used, whereas in cases of malignant growth, where tissue destruction is required, large doses are needed, and small doses instead of destroying the neoplasm may do harm rather than good by stimulating it to renewed activity.—Editorial, *Medical Record* (July 9, 1910).

ABSTRACTS AND TRANSLATIONS

HYDROTHERAPY.

The Fallacy of Frequent Warm Enemata.—Do not allow anybody to use warm enemata habitually. They cause muscular atonicity and the patient's later state is worse than the earlier. Cold water exerts a contrary effect and its use is a wholly rational practice.—*Critic and Guide*.

The Enema in Typhoid Fever.—The treatment of typhoid fever presents many indications for an enema and Drueck thinks that it is many times forgotten. For the diarrhea a hot enema of two to three pints, and after it is voided a cold enema of one pint is of value. For the constipation which sometimes displaces the diarrhea and for tympanites and meningitis a copious colocolyster at 95° F. may be administered twice daily, and yellow soap or one dram of turpentine may be added to this. For the high temperature or delirium a cold enema at 70° F. is advised, to be retained for fifteen minutes and repeated every three hours until the temperature reaches 102° F. But with a high temperature and a cold skin we have a different condition and we want the stimulation of a hot enema and the cold friction rub to the skin. For intestinal hemorrhage a rectal irrigation with ice water is of value and two days after the hemorrhage has ceased a cleansing colocolyster at 75° F. to remove decomposing blood clots from the bowel. Gastric irritation calls for the withdrawal of food by the mouth and the giving of nutrient enemata.—*Clinical Medicine*, September, 1910.

Educative Vaso-Motor Gymnastics.—S. Solis Cohen recommends a régime quite similar in idea to Fraenkel's celebrated re-educative method. His prescription is as follows:

1. In the morning, on rising, first bathe the face and neck with cold water.

2. *Sponge* the body, except the head and neck, with *hot water*, as hot as can be borne, say 104° to 110° F. This should not occupy more than two or three minutes.

3. Then take in the hand *cold water*, say 50° to 60° F., and *rub* the whole body well with it. If preferred, the body can be sponged with cold water, or a shower-bath or spray douche may be taken, provided the rubbing goes on during the sponge or shower. *The rubbing is the important part.* This should not occupy more than two or three minutes, at first, but afterward, as the reaction gets better and better, it may last three to five minutes, but never more than five minutes at the most. Perhaps one minute will be all that can be borne at first. The cold water should make one feel warm, not cold.

4. After the cold rub, rub thoroughly dry with a Turkish towel. The skin should then be pleasantly red and glowing. This is what is meant by *reaction*. There should be a sense of warmth and refreshment.

5. In addition to this morning hot sponge and cold rub, a tepid bath (85° to 95° F.) for six to eight minutes, followed by a very quick

cold spray or cold rub, may be taken two or three times weekly just before going to bed.

Comparative Investigations of Blood Pressure, Pulse Quality and Body Temperature After CO₂ and O Baths.—In order to clear up the mooted questions as to the respective effects of these two gaseous baths on the cardio-vascular system, the author carried out a large series of careful trials, from which he concludes:

1. The temperature of the water has a material bearing on the effect of the CO₂ and O baths on blood pressure.

2. At the point of indifference (93.2° F.) the two baths do not influence blood pressure if it is not pathologically changed.

3. Indifferent CO₂ baths (93.2° F.) tend to raise the pathologically changed blood pressure, and that to an even greater extent than it is reduced by oxygen baths of the same temperature.

4. The normal pulse frequency is little altered by both baths; when it is pathologic, the CO₂ bath reduces it more often, though not as markedly as the O bath.

5. In young individuals there occasionally occurs a slight reduction of rectal temperature (by a few tenths of a degree) under the CO₂ baths, while there is a slight rise of temperature under the O bath. Plain non-medicated baths have no influence on the temperature.—Arthur Wolff, in *Zeitschr. f. Physikal. und Diäetische Therapie*, 1910, No. 14.

The Simple Enema.—Drueck, speaking on the use of the enema, says that water should have a temperature of 95° to 100° F. This temperature causes the least reaction and peristalsis. The smallest quantity of water that will suffice must be used, because the colon may easily be overdistended and the patient thus suffer irreparable damage. Large quantities of fluid should never be used, as they produce atony of the bowel by overstretching, just as atony of the anal sphincter is produced by stretching with the speculum. One quart of water should be the maximum and when we wish to stimulate peristalsis one-half pint of cold water is better than a large warm enema. To increase the effect of the enema, a teaspoonful of salt, molasses, or soap may be added, or one-half ounce of castor oil, glycerin, or oil of turpentine. Any of these added to the enema irritates the mucous membrane, removes the mucus from the bowel, and softens the fecal masses, thus aiding a prompt evacuation.

In atony of the bowel when a large part of the enema is retained, instead of being voided, the colon may be stimulated to contraction by applying a cold towel to the abdomen and lower back. If this does not suffice, the enema may be withdrawn by inserting a colon tube. An enema of a quart must never be allowed to remain in the colon, as it positively produces paresis; and, above all, one should never add insult to injury by injecting another quart before the first is withdrawn.

If there is a desire to expel the enema prematurely, it may be controlled by pressing a folded towel firmly against the anus.

The simple enema to unload the bowel may be given with the patient in the sitting or recumbent position. In these positions the

liquid is retained in the sigmoid and lower descending colon. Therefore, one quart is the maximum adult limit. One should always be careful in giving an enema not to introduce air into the bowel as that stimulates evacuation and sometimes causes colic.—*Medical Record*, July 9, 1910.

ELECTROTHERAPY.

High Frequency and X-Rays in Cancer.—Under the title, "A New Method of Treating Cancer," Müller relates of his having secured excellent results in this work by a combination of the high frequency current and the Roentgen ray.—*Münch. Med. Wochenschr.*, July 12, 1910.

The Electric Treatment of Prostatic Obstruction.—Bolton describes a method of relieving the symptoms of prostatic obstruction by the passing of an electrode into the rectum and administering high-frequency currents. This treatment may make the patient comfortable, frequently removes the necessity for catheter interference, and restores his hope for the future.—*The Lancet*, October 1, 1910.

The Cataphoretic Treatment of Carbuncle.—Leduc testifies to the efficacy of the zinc ion in the treatment of boils and carbuncles. He has treated five cases of extremely painful carbuncle in this manner, the treatment being followed in each case by the rapid disappearance of the ulcer. After applying the negative pole to the calf by means of several thicknesses of absorbent material, saturated in warm salt water and rolled around the leg, he punctured the base of the carbuncle in the neck with a tenotome, and pushed into the puncture a zinc needle in connection with the positive pole. The current was gradually raised, the patients being able easily to stand 30 ma., and this current was passed for a half an hour. The pain began immediately to diminish, and had disappeared, together with the inflammation, in every case after the following day.—*Medical Council*, September, 1910.

The Electrostatic Treatment of Lupus.—J. A. Voorthuis (*Proc. Roy. Med. Soc.*, February, 1910), has obtained good results in the treatment of lupus with static electricity after the method of Suchier. The process begins with thorough cleansing and disinfection of the parts to be treated. Under local or general anesthesia the tuberculous granulations are removed by strong, sharp curettes. After the bleeding has ceased and the wound has become almost dry the patient is connected with a metallic electrode in connection with the negative pole of the static machine. A pointed electrode connected with the positive pole is placed on the skin in the neighborhood of the wound and the circuit opened. Lifting the positive electrode 1 mm. from the skin the spark is seen and it is directed on every part of the wound. In five or ten minutes the wound is covered with a brownish crust, surrounded by an anemic ring of healthy skin. There is slight swelling, but this disappears in a few hours. Serum is often secreted, which should be absorbed by an aseptic

tampon. The wound is then dry and no bandage is required. In a few weeks the crust is loosened and epidermization has taken place under it. A flat, pink scar is left, which in a few weeks becomes white. The application is not painful. A spot the size of a shilling requires treatment for half an hour. The cure takes much less time than the Finsen treatment. The difficulty is in removing all the granulations with the curette. It is possible also to use the spark inside the cavities of the nose and mouth, by means of a small glass tube and a copper wire. The effect must be due to the heat. By this method heat is continually created by means of proximity of wound and electrode, and it can be continued indefinitely without damage to the patient. Whether the speed of the ions, the stress of the current and the light concur in the effects is not determined.—*Journal American Medical Association.*

RADIOTHERAPY.

X-Ray Tests of Gastric Motility.—Objections have been made to X-ray tests of gastric motility on the score that the bismuth is said to remain in the stomach as a sediment, while the paste in which it is at first contained is hurried out of the stomach through the pylorus. Schleisinger states that with a suitable so-called bismuth pudding this may be avoided, and as the result of a series of experiments he further concludes that the Roentgenologic method excels in precision any method hitherto employed, and that it can be used almost without exception on every patient.—*Berl. klin. Wochenschrift*, February 14, 1910.

Radiotherapy of Suppurating Glands.—Barjon found that radiotherapy gave good results in treatment of inflammatory glandular lesions, and he has recently been applying it in suppurative processes in glands and their complications, and the results have surpassed his anticipations. He describes his experiences with 56 patients. With closed lesions a minute puncture followed by radiotherapy gave perfect cosmetic results. Radiotherapy is most effectual, he states, after the suppuration has ceased under the influence of repeated punctures. If the suppurative process has opened a way outward the cosmetic results naturally are not so good, but even then they surpass those obtained by other measures. In one case suppurating glands in the inguinal region had been removed some time before, but the wounds had not healed and they suppurated anew, until there were six large ulcerations extending down on the thigh and around on the buttocks and showing no tendency to heal. Four days after the first application of radiotherapy a turn for the better was apparent, and after the sixth sitting, in as many weeks, healing was complete, the new skin being thin and supple.—*Ann. de Med. et Chirurg. Infantile*, Paris, September, 1910.

H. F. Apparatus for X-Ray Work.—Any physician who is under the impression that there is any longer the least doubt as to the value of rapidly oscillating high tension currents in the treatment of disease is simply not abreast of the times and should consult the many sources of information open to him on this subject.

Unfortunately, the first high frequency outfits of this type we are here considering that were offered to the profession were not well adapted to X-ray work. This was due partly to imperfections in the apparatus and partly to the fact that tube manufactures had not at that time produced properly designed tubes for use in connection with high frequency currents.

Recognizing the fact that every physician should consider an apparatus for X-ray diagnosis an "essential part of his equipment," and, furthermore, realizing that many physicians could not afford, or would not care to invest in both a static machine, or coil, and a high frequency apparatus, it has been found possible to combine in a single outfit a thoroughly efficient X-ray outfit and a machine capable of delivering all of the high frequency modalities. That the experiment has succeeded is evidenced by the testimony of expert radiographers and many physicians of wide experience in the use of the high frequency modalities.

It hardly matters to the average physician or his patient whether it takes an application of a second or a few seconds to secure a certain radiograph.—*Medical Brief*, September, 1910.

Roentgen Ray Treatment of Uterine Hemorrhage and Myoma.—Krönig and Gauss report 505 cases with operative treatment and 63 with treatment by the Roentgen rays and state that increasing experience is convincing them of the value of the latter in the gynecologic cases. Radiotherapy is definitely restricting the indications for operative treatment with myoma and hemorrhagic uterine trouble. It is especially indicated in cases of much debility, degeneration of the heart, obesity or bronchial catarrh. Operative treatment has still a mortality of from 4 to 6 per cent, which is altogether too high in the absence of vital indications. Excluding the above class of cases, radical treatment would have only 1 or 2 per cent mortality, and this deserves the preference as a rule for the stronger patients because it is comparatively harmless for them and because the after-effects—if the ovaries are left—are decidedly less than with amenorrhea brought on by Roentgen-ray exposures. Necessity for rapid restoration of working capacity also compels operative treatment in many cases, so that radiotherapy will generally have to be reserved for well-to-do patients, but he who has beheld the brilliant effects of Roentgen-ray treatment in his own practice will certainly prefer it, they declare, in the suitable cases.—*Münch. med. Wochenschr.*, July 19, 1910.

DIETETICS.

Oatmeal in Constipation.—A goblet of oatmeal water, taken every morning before breakfast, often cures constipation.

Banana Flour and Plantain Meal as a Food.—Vipond describes the good results he has obtained from the use of these preparations in cases of diarrhea in infants. He believes that they are both

nourishing and valuable foods, easily digested, but not ideal infant foods, as the starch percentage is high and the fat percentage is low. The dextrose and starch in banana flour vary according to the method used in preparing the flour. It has remarkable astringent qualities, he states, as has also the plantain meal, a nice white flour, more palatable, but more difficult to obtain, and more expensive.—*Montreal Medical Journal*, August, 1910.

Salt-Poor Diet in Treatment of Tuberculous Ascites.—Alwens states that at the university medical clinic at Tübingen in charge of Romberg, no benefit was derived from diuretics and local applications in 8 out of 14 recent cases of tuberculous ascites; in 5 cases by the end of three and a half weeks of treatment extremely slight improvement was manifest, and in only one of the cases had the ascites almost entirely disappeared by the end of the fifth week. On the other hand, in another group of 10 patients given only a salt-poor diet, the ascites had entirely vanished by the end of five or seven weeks in all but 2 of the cases. The food consisted of oatmeal, rice, cooked fruits, eggs, milk and unsalted butter, the total intake of salt being from 2 to 3 gm. a day instead of the usual ration of 13 gm. on the ordinary mixed diet. An occasional day of mixed diet was interposed to keep up the patients' appetite. On the salt-poor diet the amount of salt eliminated markedly surpassed the intake. It seems to be evident that the blood in seeking to maintain its osmotic balance during the salt-poor period takes up salt out of the tissues and preeminently out of the ascitic fluid. As the salt is taken up into the blood, it is accompanied by water to keep it in solution, and this excess of water in the blood is rapidly worked off through the kidneys.—*Therapie der Gegenwart*, March, 1910.

Alcohol in Arterial Sclerosis.—While the use of alcohol is always followed by arterial sclerosis, it will be new to most observers to know that the effects of spirits are more pronounced and distinct in persons suffering from this disease.

A German writer calls attention to this fact, particularly where alcohol is used as a remedy in persons who had been previously abstinent, and who are suffering from arterio-sclerosis. The particular symptoms mentioned are dizziness, headache, emotional crying and insomnia.

The psychic phenomena are grouped as follows: First, a progressive loss of mental and physical strength. Second, variable stages of depression, some of them very severe. Third, stages of exaltation resembling progressive paralysis, frequently followed by deep melancholia. He concludes by condemning all use of alcohol in any form of arterial sclerosis, asserting that it is the most dangerous drug possible.—*The Journal of Inebriety*, Spring, 1910.

The Metabolic Influence of Copious Water-Drinking With Meals.—Fowler and Hawk of the laboratory of physiological chemistry of the University of Illinois report the results of an exhaustive series of experiments.

The subject was a man twenty-two years of age and weighing, at the beginning of the experiment, about seventy-one kilograms. He

was placed on a uniform diet, and all urine and feces collected in twenty-four hour periods and analyzed. The experiment consisted of three parts, a *preliminary period* of six days during which time the subject was brought into "nitrogen equilibrium." During this period nine hundred cubic centimeters of water were daily ingested, three hundred cubic centimeters of this amount being taken with meals. The second period or "*water*" *period* was five days in length, and during each of these days one thousand cubic centimeters of water above that already mentioned were taken at each meal. The *third period* was eight days in length, and during this period the amount of water ingested was the same per day as in the preliminary period. The main conclusions follow:

(1) An increase in body weight, aggregating two pounds in five days.

(2) An increased excretion of urinary nitrogen, the excess nitrogen being mainly in the form of urea, ammonia and creatin.

(3) A decreased excretion of creatin and the coincident appearance of creatin in the urine. The decreased creatinin output is believed to indicate that the copious water-drinking has stimulated protein catabolism. The appearance of creatin is considered evidence that the water has caused a *partial* muscular disintegration resulting in the release of creatin, but not profound enough to yield the total nitrogen content of the muscle. The output of creatin is, therefore, out of all proportion to the increase in the excretion of total nitrogen.

(4) An increased output of ammonia which is interpreted as indicating an increased output of gastric juice.

(5) A decreased excretion of feces and fecal nitrogen, the decrease in the excretion of fecal nitrogen being of sufficient magnitude to secure a lowered excretion of both the bacterial and the non-bacterial nitrogen.

(6) A decrease in the quantity of bacteria excreted daily.

(7) An increase in the percentage of total nitrogen appearing as bacterial nitrogen.

(8) A lower creatinin coefficient.

(9) A more economical utilization of the protein constituents of the diet.

(10) The general conclusion to be reached as the result of this experiment is to the effect that the drinking of a large amount of water with meals was attended by many desirable and by no undesirable features.—*The Physician and Surgeon*.

VACCINE THERAPY.

Vaccine Therapy in Its Relation to Surgery.—The general indication for the employment of vaccine therapy is chronic or subacute infection with good resistance, the dosage to be regulated by the severity of the infection and the known virulence of the organism and its toxins.

To recapitulate: Specific vaccine treatment in our hands has not proved of benefit in the later stages of streptococcic septicæmia.

Staphylococcic septicæmia has been treated with most favorable results in all stages.

Septic intoxications without demonstrated blood invasion in a majority of the cases display general and local improvement under the use of vaccines if given early; the later the treatment the less certain and satisfactory the result.

Localized and persistent suppurating conditions are sometimes markedly benefited by vaccines.

Surgical procedures for the relief of infectious conditions should be reinforced by vaccine treatment, which should be begun as early as is consistent with the case, and preferably by autogenous organisms.

No hospital can be considered fully equipped which is not prepared to supply this form of treatment in conjunction with established measures.—*Surgery, Gynecology and Obstetrics*, August, 1910.

Vaccines in Surgical Tuberculosis (J. A. and N. K. Macleod, *Buffalo Med. Jour.*, August, 1910).—The authors use in their practice a mixture of the two vaccines (emulsions of both human and bovine types of dead bacilli), with uniformly good results. They emphasize the following points: (1) The earlier the lesion, the smaller the dose needed, old-standing cases tolerate relatively larger doses; (2) Patients suffering from tuberculosis of the epididymis or of the kidney do not tolerate as large doses as do those suffering from tubercular lesions elsewhere; (3) As the reaction is sometimes sharp, care must be taken to guard the patient against mixed infection; (4) Children tolerate relatively larger doses of tuberculin than do adults; (5) In regard to autoinoculation, the risk of absorption from the tubercular focus may be reduced by compelling absolute rest, and by exhibiting calcium lactate if the clotting power of the blood is low; (6) The authors proceed slowly, beginning with small doses, and do not exceed 1/1000 to 1/4000 milligramme of the combined vaccines, with intervals of from 5 to 7 days between inoculations. They assert that the benefit accruing from inoculation prior to operation cannot be over-estimated, wounds heal quickly, and mixed infection is unlikely. Finally, cases untreated with tuberculin prior to operation, which have resulted in the formation of sinuses, are to be inoculated after the focal area has been surgically treated, so that the vaccines may get better at the lesion; with the same object in view, if the blood clotting power is high, it must be lowered by administering citric acid.

Gonorrheal Vaccine and Anti-Gonococcic Serum Treatment.—Schmidt, of Chicago, in a paper on this subject, referring especially to joint involvements, says that practically all of his cases are treated locally along the usual lines, while others have the vaccine or sera in addition. He notes that other joints have become involved while patients are under the last two and that they do not give any lasting immunity. Comparatively small doses, 10,000,000 to 50,000,000, repeated at fairly short intervals, four to five days apart, are far more efficacious than larger doses, 75,000,000 to 150,000,000 or more, and given six to seven days apart. It is desirable to commence with minimum doses of vaccine in acute as well as in chronic cases, that

there should only be a gradual increase of the dose, and, if the doses are maximum, that the intervals should be far apart. The maximum dose, if given, is probably best in the chronic cases, which are considered metastatic.

In the vast majority of cases of gonorrheal arthritis, occurring during an acute attack of gonorrhea, he is inclined to believe that there is usually a gonococcemia, and the results obtained have been far more satisfactory with vaccine than with serum. But in chronic urethral adnexa cases in which the gonococcus is the only infecting bacterium and in which the joint involvement is possibly only toxemic, serum therapy has been of greater benefit. In chronic gonorrhea complicated with secondary infections of the urinary tract with its adnexa, the joint complications have not improved to any extent with either serum or vaccine or with both. Injections of vaccine corresponding to secondary infection in addition to gonococcic vaccine have not been productive of good results.

The quantity of vaccine at each individual dose varied from 10,000,000 to 100,000,000; serum, from 2 cc. to 10 cc. The intervals between the doses of vaccine and serum varied from three to twelve days.

The total number of cases treated with either or both showed the following results: (a) No improvement, 14.28 per cent. (b) Improvement, 57.16 per cent. (c) Cured, 28.56 per cent.—*The Therapeutic Gazette*, September 15, 1910.

Therapy by Bacterins and Tuberculins in Mixed Suppurative Bone and Joint Disease.—Willard and Thomas say that inoculations by bacterins and tuberculins, either alternately or separately depending upon the condition of the patient, furnish a valuable accessory therapeutic measure in the routine antituberculosis, hygienic and surgical treatment of mixed suppurative bone and joint disease. Bacterins, especially tuberculins, are more potent agents for evil than for good, unless competently administered. When these remedies are carefully employed, patients do better with than without them, their detention in the hospital is materially shortened, and complications, if they occur, are fewer and less severe.

This therapy is superfluous in mild cases where simple operation and time will effect cure; nor is it applicable to neglected cases with prolonged suppuration, characterized by bacteriemia, grave sapremia, and amyloid disease. So long as the temperature fluctuates above 100° F., autogenous bacterine, obtained by culturing and reculturing the suppuratin found to contain variable bacteria from time to time, are administered. Tuberculin inoculations are begun when the temperature falls to 100° F. or preferably lower. Better results have attended the process of active immunization, where just as in tuberculin therapy pure and simple, the treatment has been commenced with relatively small bacterial inoculations, progressively increased to the therapeutical limit, rather than by recourse to large doses, thereby establishing immunity in the former case and in the latter avoiding anaphylaxis.

Tuberculin alone in the earliest stage of acute tuberculosis has not proved of noteworthy value, probably due to the fact that the dis-

ease progresses too rapidly for the production of immunity, a result which necessarily consumes months. Careful observations of the clinical symptomatology have invariably sufficed to control the inoculations, the opsonic index as a guide proving not only impractical but frequently erroneous.—*Annals of Surgery*, June, 1910.

Conclusions Regarding the Opsonic Index in Tuberculosis.—

1. As a rule, one may safely reinject with bacillen emulsion every ten days.
2. Treatment with bacillen emulsion did not produce a permanently high opsonic index.
3. Patients with indices invariably above the normal range of 0.8 to 1.2, as a rule, showed either improvement, a non-progressive lesion, or a quiescent lesion; while persistent low indices accompanied progressive lesions.
4. In some cases of pulmonary tuberculosis with small lesions the opsonic index may fluctuate to a great degree.
5. The percentage index generally follows the curve of the opsonic index.
6. The opsonic index is only approximate and not absolute.
7. Great and unaccountable variations may occasionally occur in the opsonic index of the same serum when two or more tests are performed at the same time with apparently the same technic.
8. The estimation of the opsonic index requires too tedious and delicate a technic to be of great practical use in the clinic.
9. It is impossible to depend upon the opsonic index, in the majority of instances, for a guide to the dosage of tuberculin in those cases coming to the Phipps Institute Dispensary, because they cannot report often enough to make the index of any value.—Blackwood, in *The Pacific Medical Journal*, May, 1910.

CRYMOTHERAPY.

Carbon Dioxide Therapy.—According to Dr. Julius Burger of the skin clinic in Breslau, Germany, solid carbon dioxide was used in that institution as early as 1904 with considerable success in cases of trichomycosis, skin tuberculosis, ulcers in the leg, etc., and beneficial effects had also been observed in a case of skin cancer. In the last case, the action of the carbonic acid was continued for about a minute at a time.—*Carbonic Acid*, September, 1905.

Carbon Dioxide Snow in Dermatology.—Freezing was first employed as a cauterant less than ten years ago. Liquid air, at first resorted to, has been found of too extreme frigidity and hence difficult to handle with entire safety. Today specialists generally appreciate the superiority of carbon dioxide snow over liquid air. Dr. Richard L. Sutton, Kansas City, Mo., calls the attention of the general practitioner to the facility with which the snow may be utilized and the excellent results that can be obtained in selected cases.

Carbon dioxide gas, which is almost universally employed in operating soda water fountains, is obtainable everywhere at slight expense.

In order to secure the snow, which forms when the gas is allowed to escape into external air, the container is first tipped up until the valve end lies six inches below the level of the closed extremity. A frame, consisting of two forked uprights, one eighteen inches in height, the other two feet, rendered stable by a connecting bar three feet in length, is a rough but efficient stand for the cylinder. Chamois is used to protect the fingers and for making a pocket in which to condense the gas and form the snow. The more firmly the snow is compressed the more slowly does it melt. The inexperienced operator is apt to waste about half the product.

Applications of the snow are made with bits firmly compressed in a convenient shape and size. The effect produced depends upon the amount of pressure and the duration of the freezing. From ten to sixty seconds is long enough to keep the snow in contact. Firm applications of longer than thirty seconds usually give rise to more or less scarring.

For the first day or two the vesicle may be protected, if necessary, by a perforated felt pad, but when fully developed it should be drained and an antiseptic dusting powder applied for twenty-four hours.

Later, the lesion is dressed with a 1 per cent ammoniated mercury ointment until it heals.

At present Dr. Sutton is confining its use, for the most part, to a rather limited number of pathologic conditions; naevi, lupus erythematosus, chloasma, senile keratoses, plantar and palmar warts, obstinate, circumscribed patches of chronic eczema and seborrhoic dermatitis, and superficial epitheliomata.

Treatment of Common Warts, Clavus and Callosities with Carbon Dioxide Snow.—Drs. F. Parby and Zweig, of Dortmund, state that the advantage of carbon dioxide snow lies in the fact that warts, corns and callosities may be removed without operation, prolonged treatment or much pain, and that no scar results. The snow is obtained by fastening a leather pouch tightly about the outlet of a carbon dioxide pressure cylinder and allowing two or three puffs of the gas to escape. The snow is shaped into pencils by pressing it through a glass syringe without a needle. The application, which may be made with some pressure, is continued from twenty to fifty seconds (less in youthful, more in aged individuals). With warts the area treated should be about double that of the wart. The nearer to the finger tip the more painful the treatment. In about twenty-four hours the wart will be found free from the underlying skin at the apex of the bulla. The vesicle is now excised, and the raw surface, which is formed by the papillæ of the skin, is dressed with a bland powder. In keratosis palmaris it may be necessary to treat fifteen to twenty spots at one or more sittings. The large vesicle, covering the entire sole of the palm, is then excised. By this simple method prompt and permanent results may be obtained.—*Münchener med. Wochenschr.*, March 29, 1910.

Various Means to Produce and Mold Solid Carbon Dioxide.—Owing to the fact that a suitable instrument to produce and mold solid carbon dioxide was missing during the first years of the applied carbon dioxide therapy it was left to the originality of the operator to produce it as best he could.

These methods were necessarily crude; however, they enabled the profession to obtain practical results.

In Gottheil's method a folded towel or a piece of chamois skin is applied to the vent in such a way as to be in sufficiently close contact with the orifice. He sometimes uses a cylindrical staff or short piece of broomstick to get a proper cavity in the towel, removing it after the first windings of the retaining bandage have been put on. With ordinary rollers this hollow towel or bandage is firmly bandaged to the vent and heavily reënforced. It is well to use plenty of bandage and to wind it tightly around the neck of the vent and top of the cylinder, for on this depends the amount of pressure that can be used without rupture or escape of gas and the hardening of the ice. With the key the gas is then turned on at the tap, slowly at first so as to permit the ice to freeze in the meshes of the container. Clouds of white vapor or fine snow escape; the cloth may rupture and the cylinder top is covered with hoar frost. The gas is then turned on again forcibly a number of times until a sufficiently large and firm mass of ice has formed. When this is obtained the cloth is icy cold and perfectly hard; the gas is then shut off and the bandage cut away. The ice cylinder and the cloths are frozen together, and the bandages are brittle and must be carefully disentangled to avoid tearing.

Pusey's method is to collect the snow in a cloth, or preferably a chamois skin, and subsequently to compress it into a solid mass with the hands protected by a cloth, and to pare into any desired shape with a knife or press it into a tubular mold.

These crude methods have since become obsolete through the introduction of an instrument which produces a crayon of suitable shape and solidity in the easiest and most elegant manner.

Blotting Paper Mold for Obtaining Crayons of Carbonic Acid Ice.—Various means have been suggested to produce a suitable crayon of solid carbon dioxide. Tousey explains the following method employed by him, which deserves mention owing to its originality:

Tousey's device consists in a hollow cylinder made by rolling several layers of blotting-paper around a lead-pencil or a glass vial, which is then removed. The blotting-paper must be absorbent all the way through, not sized on one side like so many advertising blotters. One end of the tube thus formed, it is tightly stoppered. The other end is placed tightly against the nozzle of the liquid carbonic-acid tank and wrapped around with adhesive plaster to make an air-tight joint.

The carbonic acid cylinder employed is a small one, 18 inches long and 4 inches in diameter, and containing 5 pounds of liquefied gas. It is laid on its side with the lateral nozzle turned downward. The liquid should be allowed to flow out into porous paper tube. A portion immediately vaporizes and escapes through the meshes of the paper, producing cold enough to freeze the remainder. The liquid is allowed

to flow very slowly, taking perhaps a minute to fill the tube. Turning it on full force would blow the tube off and waste a great deal of the liquid. When the mold is full of ice the liquid will begin to spurt out around the adhesive plaster, and the flow should then be turned off. The adhesive plaster being unwrapped, the porous paper cylinder will be found to contain a crayon of carbonic acid resembling very much the crayons used for writing on a blackboard. The blotting-paper may be unwrapped from one end of the crayon so as to expose the latter. Or after waiting a short time the crayon will be found to have lost some of its substance by direct evaporation and to lie loose in the blotting-paper tube. The crayon may be made to protrude as much as desired by holding the tube upside down with something to prevent the crayon falling out altogether. The blotting-paper is flexible enough and a sufficient non-conductor of heat to serve as a handle for the crayon, which must not be touched by the naked hand.—*Therapeutic Gazette*. ..

MISCELLANEOUS.

The Dosage of Bier's Hyperemia.—M. zur Verth discusses the production of hyperemia by means of the elastic bandage, and says that the maximum hyperemia occurs in association with the minimal arterial pressure, and may be obtained by producing a pressure somewhat below the minimal arterial pressure obtained by the auscultatory method. Researches have shown the highest blood pressure in the hyperemic area is obtained by producing a pressure just equal to the diastolic blood pressure. The acoustic phenomenon heard between maximal and minimal arterial pressure is the indicator which prevents too viruous an application of the bandage.—*Münch. med. Wochenschrift*, April 5, 1910.

Radium Therapy.—Eichholz says that there is a decided difference between radium rays and emanations. The local action of the radium rays is inhibition to physiologic functions; in strong doses they produce tissue destruction. The rays come into play only in affections which can be reached directly as neoplasms and skin diseases. Great care must be used in applying them. The emanations have an exciting irritative action. They are anti-bacterial and resorbent, and stimulate metabolism. Once taken into the body they activate tissues and organs and are excreted mainly through the breath. Treatment by emanations consists of drinks, baths, inhalations, injections, and applications to the skin.

The indications for radium treatment are as follows: (a) Chronic inflammation of all kinds, either in the soft parts or in the bones and joints, rheumatism, arthritic processes, neuralgia and chronic purulent exudates; (b) constitutional diseases, scrofula, rachitis, tuberculosis, anemia, chlorosis, arteriosclerosis, diabetes, and obesity; (c) catarrh of the mucous membranes; (d) neoplasms, both in operable malignant and benign tumors; (e) skin diseases with horny proliferation, as

chronic eczema and psoriasis; also furunculosis and anomalies of the sweat glands, seborrhea, comedones, acne, etc.; (f) weaknesses of old age and following illness; (g) bacterial diseases (internal disinfection by the drink cure). Contraindications to radium therapy are acute diseases, pregnancy, nephritis, hemorrhages, and gastric ulcer. During treatment frequent examinations of the urine for albumin are indicated.—*Berliner klin. Wochenschr.*, June 6, 1910.

Climate and Consumption.—In *Public Health Bulletin* No. 35, S. G. Smith takes up the relation of climate to the treatment of pulmonary tuberculosis. His conclusions are those which we have advocated for twenty years, that proper treatment by skilful physicians is worth more than any climate, and that no climate in itself is curative of consumption or renders the tubercle bacillus inert.

The best climate for a patient is usually that in which he has to live. Take a Creole from the South and send him to Minnesota, and he will die. Take an Eskimo to the tropics, and he will die, in each case more certainly and quickly than if he remained in the climate to which he was accustomed.

Acknowledging all this, however, there is this in climate, that that locality which enables the patient to realize most nearly the ideal of an outdoor life is the one in which he or she will do best.

To some extent the question of climate may be settled by an investigation of concomitant circumstances, or diseases to which the patient may be liable. There are many contraindications to high altitudes. They are inadvisable for persons of low vitality and poor circulation; the old or middle-aged with declining powers of reproduction; the erethitic, the neurotic or irritable; those with acutely progressive disease, or who cannot attain temporary arrest at home; far-advanced cases with much destruction of lung-tissue, resulting in dyspnea, including the fibroid type, with dilatation and nervous derangement of the heart and certain forms of uncompensated valvular disease; and those with diabetes, nephritis, or other incurable organic maladies by which their days are already numbered.—*Clinical Medicine*, September, 1910.

The Quartz Lamp in Trachoma.—Hegner and Baumm first refer to the use of radiography and radium in trachoma, and the occasional favorable results obtained thereby. The employment of the quartz lamp, borrowed from the dermatologists, on a case of recent trachoma is perhaps the first yet undertaken (at least no prior attempts are mentioned). But two cases are reported. The authors evidently wish merely to place on record the action of the lamp from various points of view. An exposure of from 4 to 10 minutes causes the formation of a false membrane, and a considerably longer one tends to cause general swelling of the eyelids. Mere momentary exposure causes hyperemia. The proper dosage, to be both safe and efficacious, should be that sufficient to produce a thick, false membrane. This should come away in a few days, bringing the follicles with it. From one to three treatments may be required. No cicatrization was produced. If the lids swell they should yield readily to hydrotherapeutics. The authors evidently did not obtain all their information from the two cases cited,

for they appear to have tested the lamp quite extensively. The exposure is not very painful and as a rule local anesthesia is not required. The first case was treated 18 months before the report was made, and patient has remained well. The second case is still under treatment. The lamp may be used in combination with other measures.—*Brit. Med. Jour.*, July 30, 1910.

The Therapy of Work.—Man is mentally, morally and physically so attuned that when disordered his perfect restoration demands intelligent readjustment of each element, says R. S. Carroll. The derangements of the mechanical workings of the body have been subject to increasing surgical skill until we invade every precinct of the body. But this has had its evils, and until recently practically normal organs were sometimes removed and exploratory incisions were made for their "mental effect." The modern physician with his immense therapeutic armamentarium, must still feel the stigma of empiricism as he faces many of the diseases of internal medicine, and one reason is that he has ignored that principle of life connected with, dominating and making the real body, the psyche. The neurologist has been pleading that a certain percentage of invalids are psychically ill. Emotional shock is interpreted through the physical sensations, the individual becomes self-centered, the physician who has a powder for every pain fails to apply his psychology and the patient after passing through the hands of the physician, the oculist, the abdominal surgeons and the osteopath finally finds cure in the negations of Eddyism, and medicine is rightfully discredited. The neuropath may also be of the hereditary type, and then the case is difficult. The acquired form may result from exhaustion, intoxication or have its origin in the

Envy puts more dents in contentment than poverty.

* * *

A firm purpose is already more than half achieved. What you will do, is done.

* * *

Let us be of good cheer, remembering that the misfortunes hardest to bear are those which never come.—Lowell.

* * *

Rouse in yourself the unconquerable will! Do not for a moment acquiesce in defeat! You can accomplish little without confidence in yourself, and to lose it is infinitely worse than loss of capital, loss of position or even loss of health, for when confidence is gone all is gone.

REPRINTED ARTICLES

THE PLACE OF ELECTRICITY IN MEDICINE.

BY F. M. TAYLOR, A. B., M. D., PORTLAND, ORE.

Electricity has long been used in medicine. It has only been during the last few years, however, that it has had a recognized place in the curricula of our medical schools. Considerable prejudice has existed against it because it has been a favorite field for charlatans and fakirs. It has lent itself readily to their requirements because of the many mysterious phenomena attendant upon its production and use.

To the original armamentarium of galvanic, faradic and static electricity has been added high frequency, sinusoidal and undulatory currents; and to these may be added the luminous and caloric radiations, the X-ray, and forms of radiation with every variety of wave length. These latter forms of electricity I shall not attempt to discuss in this paper because their real value has not yet been determined.

Though we speak of galvanic, faradic and static electricity, it is important to recognize that there is essentially only one kind of electricity. If we develop it by friction between non-conductors we obtain it in its static form; if by contact between conductors in the presence of chemical action or heat, in its galvanic form; and if by induction by magnets or by currents, in its faradic form.

The relations of electricity to the body are many and but imperfectly understood, and the recognized therapeutic uses, with only a few exceptions, are empirical. But little is known about the physiologic effects of static electricity with this exception. D'Arsonval has recently made a number of experiments upon men and animals and concludes that the static charge always slightly augments the respiratory blood changes, and that in a seance of twenty minutes the respiratory capacity of the blood is increased from one-eighth to one-sixth. In a general way, the static current may be said to be an equalizer of the nervous forces; that it increases blood pressure, accelerates the circulation; increases the functional activity of the secretory organs, and increases the elimination of urea and carbon dioxide.

Observations of the actions of the galvanic current have been more extended and more accurate, and the different effects produced under normal and pathologic conditions give to it an important place in diagnosis of certain nerve lesions. It increases or decreases nerve excitability, according to whether negative or positive pole is applied; it dilates or contracts blood vessels under similar conditions and it produces muscular contraction when the current is made or broken. This current, too, is capable of producing electrolysis of the tissues and cataphoresis.

The faradic current is not capable of producing electrolysis or cataphoresis but muscular contractions occur when the current is applied to the motor nerve. It is difficult to excite the nerves of special sense. The nerves of ordinary sensation, on the other hand, are very readily excited. A strong faradic current is said to produce a benumbing effect on the sensory nerves, and Dr. Aust-Lawrence and Dr. Newnham have made successful use of this property in gynecologic cases. It has also been made use of for deadening the pain attending the extraction of teeth.

The sudden shock of a faradic current applied to the root of a tooth might certainly serve to distract a patient's attention.

Like the static current the general action of the faradic is to excite function. For the motor and sensory nerves it is the best and most convenient stimulus we have. By this property it exercises the muscles, increases metabolism, helps nutrition and produces a general tonic effect.

In various diseased conditions the normal reactions of muscles and nerves to electrical stimulation are altered. The changes may be either quantitative or qualitative. In cases of quantitative changes, the nerves or muscles may be superexcitable or subexcitable or they may not react at all, or combinations of these conditions may exist. Faradic superexcitability is met with chiefly in conditions of irritation, where the reflex excitability is also heightened, as in chorea, tetany, spastic paralysis, early stage of locomotor ataxia, and hysterical paralysis. Galvanic superexcitability is found in the same class of cases as the above, but with some important additions as regards the muscles, viz., in the early stages of peripheral neuritis of all kinds.

Faradic subexcitability is met with in peripheral neuritis, pseudo-hypertrophic paralysis, myopathic muscular atrophies, long-standing cases of locomotor ataxia and whenever the reaction of degeneration is complete. Galvanic subexcitability is present in pseudo-hypertrophic paralysis, myopathic muscular atrophies, and cases of protracted reaction of degeneration. The surgical use of electricity is limited principally to the removal of hair, moles and warts by electrolysis.

As I stated before, the principles of electro-therapeutics rest more upon an empirical than upon a physiologic basis, and though we have the records of more than a century to guide us, yet these were, until the last few years, deprived of much of their value from the want of scientific measurement and dosage.

The therapeutic use of electricity may be broadly founded upon three chief groups of effects: (a) stimulating, (b) sedative, (c) trophic. The stimulating effects are especially yielded by the static and faradic, or by the galvanic if the current be interrupted or reversed. The sedative effects may be obtained from the static and galvanic electricity.

Trophic effects: All forms of electricity, but especially the galvanic, have been credited with nutrition modifying and encouraging powers. It would appear, however, from D'Arsonval's researches that a continuous galvanic current possesses no such properties, at any rate on the general system, when in health. On the other hand, the static bath and alternating currents of all kinds, do exhibit these effects, which we may ascribe chiefly to nervous stimulation. Locally, no doubt, the constant galvanic current produces certain nutritive changes, but these are confined to the poles, and are of an essentially destructive nature. If the galvanic current be interrupted, then those properties that depend upon stimulation come into play.

There is no question that electricity has a place in the treatment of disease, although it should seldom be used to the exclusion of other means. Its success depends upon the care and judgment with which it is used. In fact, as Pope has aptly said, "fine sense and exalted sense are not half so useful as common sense," and this is true, whether it be in everyday life or in the practice of medicine.—Reprinted *in toto* from *Northwest Medicine*, June, 1910.

A SIMPLE AND EFFICIENT MEANS OF APPLYING ARTIFICIAL HEAT.

BY STEPHEN E. TRACY, M. D., PHILADELPHIA, PA.

Following operation when the patient is relaxed, the temperature subnormal, and the functional activity of the organs diminished, it is an essential that reaction should be brought about promptly and every means which will promote this result should be employed.

This relaxed abnormal condition of the patient is best overcome by the application of external heat, which is the greatest of all stimulants at this time. Artificial heat is usually applied by placing several hot-water bags about the patient, which is quite sufficient when there is no shock and the temperature is normal. A very small portion, usually the edge of the hot-water bag, comes in contact with the patient, and as a rule the water in the bags is only warm, as the nurses will not use hot water for fear of burning the patient, which means expulsion from most training schools.

In cases in which the patient is weak, advanced in years, or in a septic condition, or in which the operation has been prolonged, or much blood has been lost, or for other reasons there is considerable shock, we have found that the most simple and efficient means of supplying artificial heat is by electricity.

For this purpose we use a frame covered with asbestos, supplied with six or eight 16-candle-power electric lamps, which extends from the shoulders to the feet of the patient. When the patient is returned from the operating room she is wrapped in a blanket, the apparatus is placed over the body, the ends covered with blankets to retain the heat and the light turned on. In a few minutes the surface of the body is warm, reaction takes place promptly, and, in the large majority of cases, the necessity for hypodermic medication is eliminated.

After ten or fifteen minutes it is usually necessary to turn out one or more lamps, as the amount of heat is excessive and will cause profuse perspiration.

The apparatus is used also in cases in which it is desirable to keep the skin moist, as in renal insufficiency.

The appliance is simple, inexpensive, light and easily moved about, and can be connected to any electric lamp fixture—Reprinted from the *Journal A. M. A.*, October 22, 1910.

THE RELATION OF VACCINE THERAPY TO SURGERY.

BY BENJ. H. MATTHEWS, M. D., DENVER, COLO.

The exponents of vaccine therapy and those of surgery have small cause for jealousy since the indications for each are so decisive. And, still there is a large per cent. of cases in which both surgery and vaccine should be employed. At the present time there is a tendency

on the side of each to call the other only as a last resort, often to the detriment of the patient.

As illustrative of this, on the one hand, a tuberculous sinus leading to and involving a bone may be treated for a long time with vaccine, using any kind of tuberculin and supplementing autogenous vaccine of the secondary infection, inject it with bismuth paste and still if there is dead bone there, in all probability a surgeon will have to take it out before the sinus will close and stay closed. And, on the other hand, this same case may have been very carefully operated upon many times before the administration of vaccine with no permanent benefit. There have been several just such cases in my experience.

In the brief time at our disposal we can hope only to touch upon the different cases in which both vaccine and surgery should be employed. With no attempt at arrangement either in order of frequency or importance, I will give a list of the varieties of such cases which have been under my own observation, and speak of them in order:

Tuberculous cervical glands, tuberculous sinuses, tuberculous epididimitis, tuberculous kidney, empyema, ruptured appendix, gall bladder operation, post typhoid periostitis, progressive cellulitis, septicemia following injury or puerperium, suppurations following injury, compound fractures, boils, sinusitis, mastoiditis, otitis media and chronic gonorrhea.

Tuberculous cervical glands, if uncomplicated, will all yield to vaccine. There are cases reported to the contrary, but in my limited experience I have never seen one which was not at least greatly improved. Two years ago I reported such a case but it responded later to the emulsion of the bovine baccillus. If the glands be broken down or of such size and location that immediate relief is necessary, then, of course, they should be operated upon. When broken down and discharging they will very often dry up and get well without operation, but if skillfully operated upon recovery is more prompt and the scar less unsightly. Just how much importance there is to be placed upon the human type and bovine type of baccillus, I am not in a position to say, but this much is certain, some cases do best on one and some on the other.

Tuberculous sinuses, often if not usually drain a diseased bone. If after a few months' treatment the sinus persists, there is almost certainly some dead bone which must be removed.

In tuberculous epididimitis, it is a question whether one should delay operation in any case. For awhile many cases respond quite promptly and satisfactorily to vaccine, some do not and the progress of the disease is so apt to involve other adjacent tissues that it seems scarcely worth while to run the risk. Especially so when one considers the function of the epididimus terminated early in the disease. But the tendency of the disease to later involve the other epididimus, or follow up the cord, is sufficient reason for a course of vaccine following operation.

The same is true of tuberculous kidney, changed only by the difference in the location of the organ. In my judgment, the wound heals

more promptly and the patient makes a more speedy recovery if operation is preceded and followed by vaccine.

Empyemas which require operation, are so prone to be long drawn out cases, that it seems to me *every* possible effort should be made at the very start to shorten the course of the disease. I am sure we have all seen such cases which have been discharging months and even years, stop discharging, heal and the patient's general health be greatly improved by vaccination. If these extreme conditions are benefited and even cured, does it not seem reasonable that the course of every case would be shortened?

With ruptured appendicitis, gall bladder operation, or any condition where the abdominal wound is exposed to the bacteria of the intestinal tract, there is usually a prolonged drainage. If particularly severe or prolonged, an autogenous vaccine is of the greatest assistance. Why not then in every case?

In the last year I have seen three cases of cellulitis unchecked by liberal incision, which responded promptly to autogenous vaccine. Another case unchecked by vaccine promptly stopped by liberal incision. My conclusion is not that these three were cured by vaccine and one by liberal drainage, but all were cured by the combination of the two.

Out of two dozen general sepsis conditions which I have treated, two died; one septic for sixteen days before I was called, died that night; the other septic for twenty-one days before treatment, lived to the twenty-fourth day. The others recovered.

Suppurations, following injury and compound fractures, do not usually endanger life, but are very common. They are usually in working men, to whom time is an item. The period of repair can be greatly shortened by vaccine, usually staphylococcus. Boils often require surgery. They always yield to vaccine. Even the sloughing furunculosis of diabetes is vastly improved.

If operation in sinusitis, mastoiditis and otitis media fail to relieve, vaccine is of the greatest aid to recovery and should be given to every case on the first sign of chronicity.

There are probably more remedies for chronic gonorrhoea than for any other dozen diseases combined. Irrigation with antiseptics is a waste of chemicals. Stretching or cutting strictures allows the free passage of urine. Milking the prostate and seminal vesicles is a temporary relief from the stagnated pus. Dietetics help all conditions to some extent.

The immunity produced by vaccine is only temporary and the germs harbored in pockets back of the strictures and in the seminal vesicles soon re-infect the patient. If their strictures be obliterated the vesicles carefully milked, general hygiene instituted, all at the same time with the immunity produced by vaccine, satisfactory results may be expected, but no one of these measures can be omitted. An autogenous vaccine is also usually necessary as the gonococcus is only one of the invading organisms in most cases. What has gone before may be summed up by saying: wherever vaccine is of benefit in extreme conditions it is indicated in all similar cases of a milder type.—Reprinted in *toto* from *Colorado Medicine*, Sept., 1910.

THE KITCHEN LABORATORY AND BETTER TABLE FOODS.

BY ELMER LEE, A. M., M. D., NEW YORK CITY.

Late Chairman, Section on Physiology and Dietetics, American Medical Association.

Human bodies contain at all times disease generating ingredients, without exception to age, sex or conditions. Unclean, unwholesome, deficient food, precedes, or leads to malnutrition, starvation, weakness, over-waste, under-elimination, disease and death.

If the waste accumulates, some disturbance to health and ease follows. The tissues of the body, soft and hard, flesh and bone, are saturated with blood and fluids derived from the blood that preserve and supply them with new material for growth and energy. The waste in the form of gases, liquids, vapor and alvine matter move to the exits and escape.

If the waste deposits increase too fast for any reason, the tissues become choked; distress, sickness and death may and does occur. When the life currents well up and find it difficult to effect passage through the fine arteries and veins there is trouble in the organism, which is indicated by unpleasant sensations. Immediate and proper treatment aids the system to work a speedy recovery; neglect or blundering management is an invitation to disaster.

A true and full realization of the importance of natural, clean and suitable table foods is lacking the world over, even among the educated. The notions about diet, what is appropriate, how to select, sort, clean and prepare, are mostly wrong. Very few have any just appreciation of the importance of this question. The basis for health is good, sound, clean, abundant, appropriate food. The lack of good food and sustaining nutrition are reasons sufficient and ample to explain ailment, weakness and disease. If bad foods are responsible for disease, then good food and natural foods are what is needed.

The life, health and happiness of man hinges on the quality and abundance of food he eats. Too many students fail to give this question the serious attention that is due it. There is too much looking, searching, hoping, carried on in the wrong direction; too much speculating, too much fanciful, unprofitable vivisection, ungoverned curiosity and a wholesale neglect of the practical and the obvious.

The secrets of the health and charm of human life are more likely of solution in the kitchen than in the experimental medical institutes. Food is the never-ceasing demand of the living organism, a food that sustains and does not poison, pleasant, satisfying, available. A physician, one of the multitude who feels the bad effect of a lack of appropriate food, expressed the sentiment, "The world is in need of better food."

My medical experience, study and experiments, hospital and army service, investigations in foreign countries and at home, eliminate uncertainty and doubt as to what underlies the causation of ailment, weakness, sickness, disease and death. The cause is to be traced to the kitchen, cook, poisonous foods and drinks. What business corporation could continue to exist with its vital affairs in the hands of

miseducated and untrained officers? What railroad could operate safely without a competent train-despatcher? How is it, then, that the vital question of food, involving the most important asset, that of human health, is turned over to ignorant, mistrained, unscientific, incompetent domestics?

The exquisite delicacy, the abundant nutrition, the energizing, inspiring qualities of fresh fruit, vegetable and cereal food has not been understood. The selection, preparation and use of food for an organism as delicate, as intricate, as potent as the human body is a responsibility too important to turn over to a coarse, thoughtless, heedless, hair-brained man or girl cook, the most of whom are not in sympathy with their work. The wonder is that anybody is healthy, and it is not strange that sickness, crime and poverty prevail.

The fundamental values in life, health, strength, development, elegance, refinement, civility, honor, truth, admiration and respect one for another, steadiness and efficiency, happiness, satisfaction, depend for their realization upon normal living under natural law, and the factor of largest importance is a normal diet of fruits, vegetables, grains. The new idea demands clean, abundant diet, improved and refined cooking, in fine, a new hygienic system for selecting, preparing, cooking and serving food-plant products. They contain every ingredient, quality, element of nutrition, for the fulfilment of all life activities—hard work, protracted mental or physical effort, maintenance of the body tissues, everything, nothing is wanting.

The explanation for the unfriendly criticism against vegetarianism puzzled me for a long time, but I think I understand it at last. The plant foods are most delicate in organization and require precise, even great skill, as well as understanding, to prepare and serve them, acceptable and pleasing in appearance, agreeable and refreshing in taste, and to retain the nutritive value. It is comparatively much easier to get up a satisfactory meal using meats, eggs, milk and cream, a difficulty which has been hard to get around by the would-be vegetarian. New methods in cooking, ripening, tempering, seasoning, combining and serving meet the old objections against an all vegetable-table-food diet, and leave no ground for resort to animal flesh or product as a human food.

To fittingly and successfully prove and establish the usefulness of my kitchen laboratory experiments, covering twenty years of close, unremitting research, requires a new and modern building, special in design, construction, adaptation. It should be erected in the vicinity of New York, on not less than fifty acres of land. It would include the service of hotel, sanitarium, school and dwelling. The excellence of the food would be a leading feature, composed of plants, vegetables, fruits, confections, seeds, nuts, breads, cereals, provided and used under new methods of preparation, cooking and serving, in abundance, at any hour of the day, superseding the old form of the fixed meals.

A large house, adapted and qualified to receive patients, students and guests, supplying suitable curative treatment, based on scientific, reasonable hygiene; also employment, recreation, retreat, informality, yet never familiarity. A house stately, rugged, yet elegant, never luxurious; clean, comfortable, ample, simplicity with refinement,

science and common sense. High aims, yes, very high, yet not too high for the estate and realm of man. The excellence of the table foods, the omission of animal diet, the absence of dirt, drudgery, excessive kitchen labor, indigestion, ptomaine poisoning and dissatisfaction unavoidable under the present kitchen system, seriously require a new type of house of improved scientific construction and appointments. The quality of merit in all the appointments should accord with perfection and efficiency in nutrition, the most important of the sciences, a living issue that is interesting a great many people in all civilized lands.

The project appeals to the thoughtful, as shown by letters received, and what is there that money, plans and direction could better serve than scientific, social hygiene, a benefit on the practical side of life for everybody? Some may pronounce it a dream; it is, as was the telegraph, telephone, the raising of seedless fruits, and a long list of inventions. The practical, scientific and improved use of plant-foods for the necessitous, urgent demands of a semi-starving race is an important proposition. A major part of the foods eaten are bad in substance or in the cooking and fail to serve nutrition; that reason alone keeps millions of men and their families in semi-invalidism, incipient or latent disease. Unfavorable foods and drinks induce cell starvation, start tumors, cancers, tuberculosis, typhoid fever, in fine, the deadly diseases.

The aim is one of far-reaching social improvement, radiating from a fixed center, based on normal housing, improved food, obviating the use of animal diet, not only on sentiment, but on scientific ground. A practical establishment to educate by demonstration and example:

1. That health is preserved in the fullest degree and that disease is curable by the scientific use of live, organic plant-foods.
2. That betterment of food leads to improved development in the physical and mental realm, lessens drudgery and promotes ease.
2. That an improved method in the use of plant-foods is the new basis for social and economic progress, clean lives and better conditions.
4. That insanity, drunkenness, immorality, envy, anger, cruelty, poverty, rage and war, mainly result from or bear directly on the food question.
5. That man and animal are not inclined to be savage and quarrelsome if well and properly fed and nourished.
6. That plant-foods wisely used are competent to sustain human life, advance civilization and furnish the mental and physical power equal to its needs.
7. That dwelling houses can be more favorably adapted to shelter, rear and develop the family.
8. That better dwellings, better foods, better health lead to a pleasant, useful, satisfied, longer life.

127 W. 58th Street.—Reprinted *in toto* from *The Medical Times*, October, 1910.

HYDROTHERAPY IN TUBERCULOSIS

BY CURRAN POPE, A. M., M. D., LOUISVILLE, KY.

Of all the physical measures, hydrotherapy may be said to be the most universally applicable, the most easily obtained and the cheapest to apply. We have said elsewhere that we have "yet to see the individual who could not, by judicious training, be brought to bear vigorous methods; all that is necessary is to carefully secure reaction and the gradual education of the skin and nervous system." In action, hydrotherapy is essentially a tonic, a reconstructive and upbuilding agent in its general effects, and can be used to combat many of the special symptoms that arise in the course of the disease. No one should be deterred from the use of hydrotherapy because of the lack of an exquisitely appointed institution with a well-trained staff. The truth of the business is, the entire gamut of the effects of hydrotherapy can be obtained with the simple paraphernalia that is found in almost any household in this broad land of ours. A tub, basin, blanket, sheet, a few towels, rough and smooth, is an outfit with a little mechanical skill and a bit of common sense, the average that have been most gratifying in his twenty years of experience with this agent. With these primitive objects, with patience and care, with a little mechanical skill and a bit of common sense, the average layman can be initiated into the practice of the art, and obtain such results as will more than justify the time, labor and endeavor spent in their application. It is a commentary upon the intelligence of a liberal profession to see how rarely this prescription forms a part of the treatment in these cases, probably the result of ignorance on the part of the medical attendant of the how, why and wherefore of its use. The relief that can be obtained from the toxemia that accompanies these cases would alone more than justify its use. Let us take a bad case as an example of the varying stages of treatment.

Commence with simple friction, that is, rubbing the skin with the hands, or gently with a crash glove or with a soft flesh brush. This will have the effect of filling the skin with blood, and the skins of these cases are notoriously anemic, toxemic and inactive. Try this, night and morning, for a couple of days, then give the half dry pack for a half to one hour, keeping the shoulders and arms covered. After a couple of days we can advance to the dry full pack, that is to say, from neck to feet, in which the patient remains an hour. In another day or two use the full dry pack, followed by a cold sponge. This should start at a temperature in the neighborhood of 80° or 75° F., reducing the temperature each day 5° F. until 60° or even 50° F. is employed. The proper technique of these applications cannot be too often insisted upon, and cannot be given in detail here; it is minutely described in works upon hydrotherapy. As soon as a weak patient is able, or in the beginning with ambulant patients, we may proceed to more vigorous measures. These cases always do better where the treatment is preceded by some heating measure. We may still employ the full dry pack, or use a full hot bath at 102° F., or the hot-air cabinet until perspiration becomes *barely perceptible*, followed by a rapid cold sponge and rubdown with a crash towel until the patient is

all aglow, that is, securing good reaction. This may be used on arising or in the forenoon, and at night a stimulating chest compress applied, commencing at 80° F. and reducing 2° daily to 60°. This is to be worn all night. Where a shower-bath can be attached to the home bathtub, it will be found of signal benefit, and should be substituted for the sponge. As soon as a temperature of 60° F. is reached, give the treatment once daily. If the physician does not care to apply a chest compress, it is an excellent plan to sponge the chest and trunk rapidly with water at 60° F. just before retiring. Appetite can be increased by applying the ice-bag over the epigastric region for half an hour prior to the principal meal.

In the institutional management of these cases, we may select the hot-air, vapor or incandescent electric light bath; the latter is to be much preferred. They should be administered for a short period, and stopped at the commencement of perspiration. *Under no circumstances should profuse perspiration be induced.* As soon as the patient is sufficiently warm, he is removed from the electric light bath and given a circular, needle or rain bath at 100° F. for one minute, reduced to 65° for ten to fifteen seconds. As soon as patient can stand same, full daily treatment should be instituted, as follows: Electric light bath until perspiration commences; circular, needle or rain bath at 100° F. for one minute, fan douche 65° F. to entire body ten seconds; jet douche to legs, spine and apices front and rear, ten seconds. During the application of the cold water it is a good plan to have the mouth open wide, in order that deep respiration may be taken, and to move the arms, legs and chest, as this will reduce the shock of the impact of cold water and favor reaction. Treatment should be finished with *good friction*, first with the hand and afterwards with a Turkish towel. All treatment should be given in a warm room, the best time for the bath being the morning hours, each treatment being followed by a lunch.

The patient should be frequently weighed, a gain indicating success and loss a failure to adapt the method to the case in hand. The writer does not believe in the cold plunge in these cases; it is too severe. Sea bathing is frequently recommended, but it should be very carefully prescribed. In the early stages, those who are strong or fairly strong, who are non-hemorrhagic, may, after a short warming-up upon the sand by the sunlight, take a *very brief* plunge. Immediately upon their exit from the surf they should be wrapped in a long, heavy bath robe, retire to their bath-room, be rubbed down well, don their clothes and return to the sunlight. We must always insist upon complete and satisfactory reaction.

If one has to deal with a case presenting, in addition to the usual symptoms, heart weakness, dilatation, high pulse-rate and temperature, it will be found that the use of the ice-bag to the precordium three or four times a day, together with the administration of carbon dioxide baths, will more probably fit the condition than any other method.

The influence of hydrotherapy is to stimulate, in an unparalleled manner, nervous function; to relieve congestion and develop a neuro-vascular power equaled only by active muscular exercise. It deepens

respiration, increases the oxygenating power of the blood, favors the elimination of carbon dioxide and other waste materials. It increases appetite and digestion, and as a result more food is taken and assimilated, and thus a gain in flesh is possible, while at the same time reparative factors are removing the diseased process and making good the damage already done; for, by the means of increased circulation, by nerve action and increased oxygenation, waste products are destroyed and more rapidly removed from the system. Every gland in the body is stimulated, and by this means better and more active glandular products produced. Its energizing influence upon the heart and blood-vessels causes an increase of blood circulation, the removal of stasis, congestion and inflammation, wherever they may be; this I have seen time and time again in all classes of patients. It checks night-sweats, reduces cough, favors expectoration and relieves temperature. It will thus be readily seen that it sets in action the entire tissues and structures of the patient that are essential to the maintenance of health and physical integrity.—Part of an Essay on "*The Physical Forces in Tuberculosis*," read before the Mississippi Valley Medical Association, Detroit, Mich., September 13-15, 1910. Reprinted from the *Lancet Clinic*, October 8, 1910.

Remedial Measures Other Than Drugs in Cardiac Diseases.—

There are four cardinal factors, other than drugs, in the treatment of the cardio-vascular disorders, says Dr. H. A. Hare, in *The Therapeutic Gazette*. These are in order of importance, rest, massage, hydrotherapy, and diet. It is a great mistake to treat ruptured cardiac compensation with drugs without the use of rest, and this for two reasons: (1) Only by rest can a tired organ recover its strength, and (2) only by skillful adjustment of the dose to the needs of the patient can success be achieved. For no patient going about on his feet presents physical signs which may be called his "pathological norm," and such a one, examined in the physician's office may seem to need very large doses; whereas, if examined after twelve or twenty-four hours in bed, no drug at all, in the sense of cardiac stimulation, may be required. Not only is this true of the heart, but of the vessels as well, for rest raises hypotension and lowers hypertension, and by so doing restores, at least in part, a normal relation between the heart and its vessels, a relationship which, if disordered, rests not only in disturbed cardiac action, but interferes with the nutrition of the entire body, and of the heart in particular, and also involves the activity of the liver as a destroyer of poisons and of the kidneys as excretive organs. Massage is of little value in edematous cases, but of superlative value in cardio-vascular diseases with high tension. Hydrotherapy is designed to maintain vascular elasticity, and is most advantageous. Both it and massage are of value in case of hypotension to re-establish normal vascular tone. In dieting the allowance of food chiefly depends upon the circulatory state of the gastro-duodenal tissues and the liver. Usually it is useless to give enough food or drug to be of value, until the patient's liver is unloaded by a mercurial purge and the low-grade gastrointestinal catarrh dissipated.

BOOK REVIEWS

HYDROTHERAPY. By Guy Hinsdale, A.M., M.D., Hot Springs, Va. Octavo, 466 pages, with 143 illustrations. Philadelphia and London: W. B. Saunders Company. Cloth, \$3.50 net.

No one book will ever cover the subject of the therapeutic uses of water and those that we have already seen evidently do not cover the subject, simply because we had not gone far through Doctor Hinsdale's splendid new book before we found something that was not in the other books. The book is by no means superfluous, even though there happens to be four or five other books published in this country that are devoted to the same subject.

In the preface we read: "While the author is a firm believer in using physiologic therapeutics wherever possible, he by no means wishes to exclude the use of drugs. Rational therapeutics calls for their use, but reference to them is necessarily omitted here."

This broadness of spirit is manifested throughout the book. The author is not a crank, rather he takes a very sane, conservative view of the subject and explains as he proceeds.

An innovation is a department devoted to the use of waters internally and to those especially interested in this field this book will be exceptionally interesting.

THE AMERICAN QUARTERLY OF ROENTGENOLOGY, published by the American Roentgen Ray Society, P. M. Hickey, M. D., Detroit, Editor. Subscription, \$5.00 a year postpaid.

The September number of this journal came into our hands recently and we feel to review it with more than usual interest. This special number should be in the hands of every Roentgenologist. The illustrations alone are "worth the money."

Dr. Emil G. Beck, of Chicago, has an article on "Stereoscopic Radiography in Pulmonary Tuberculosis" which is illustrated with eight actual photographic prints, which may be used in a stereoscope.

Dr. W. H. Dieffenbach, of New York, writes on "Roentgen-ray Diagnosis of Diseases of Bones" and illustrates his article with seven full-page half tones.

Other articles by Doctors Peabody, Hulst and Holzknecht, make a book of intense practical value. Another feature of this issue is a "Roentgen Index" from July 1909 to June 1910, compiled by Dr. D. R. Bowen, of Rome, N. Y.

This is the best piece of X-ray literature that we have seen for many a day. We advise those of our readers who have no copy, to see that they get one. Address Dr. P. M. Hickey, 32 Adams Ave. W., Detroit, Mich.

FOUR EPOCHS OF LIFE. By Elizabeth Hamilton-Muncie Ph. M., M. D. Brooklyn, N. Y. 12-mo. 272 pages, illustrated. New York: The Greaves Publishing Co., 606a Tribune Building. Cloth, \$1.50 net.

Dr. Muncie evidently has a burden for the enlightenment of the world and especially those that teach. She has written here a story

which is filled with splendid beautiful thoughts and valuable pointers. She must surely be a teacher herself, for her book is a beautiful lesson.

Interspersed among the many incidents of this novel are a number of excellent suggestions which the Doctor has made and emphasized well. The important and much neglected matters of sex-education are discussed fearlessly and with singular attractiveness. We believe that many of our readers will be glad not only to read this book and to recommend it to their patients, but also to see that their daughters and wives get a chance to read it.

Such a book deserves a world-wide circulation, and it will get it.

DYSPEPSIA; ITS VARIETIES AND TREATMENT. By W. Soltau Fenwick, M. D. (London) Doctor of Medicine of the University of Strassburg. Octavo of 485 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, \$3.00 net.

This work treats of "dyspepsia" due to other conditions than the organic diseases of the stomach.

Besides the consideration of abnormalities in Secretion, Atony, Gastritis, Gastric Neurasthenia and Gastropstosis, there are chapters devoted to Chronic Pancreatitis, Chronic Intestinal Indigestion, Chronic Gastro-enteritis of Infancy, and Dyspepsia dependent upon disease of other organs. The author has given special attention to the etiology of conditions considered, and his large medical experience has enabled him to arrive at some pretty definite conclusions.

The various subjects are generally well treated. For the reason that the work does not include chemical analysis, other methods of diagnosis, Gastric Cancer, ulcer, etc., it is of course, not adapted to the needs of the student. While much will be found in this work that will prove of interest and benefit to the general practitioner, the average physician to-day is in far greater need of some good work on Diseases of the Stomach, to which this book may well serve as a supplement.

CHASE.

CORRESPONDENCE

Static Machines—High Frequency Currents.

Chicago, Ill., September 18, 1910.

TO THE EDITOR:

We wish to comment on your answer to the query of Dr. Doyle as given on page 183 of your September issue. Of course, your answer was perfectly correct, but it might seem to some of your readers that it was impossible to obtain sufficient amperage from a Static Machine to give effective High Frequency Current. It must be remembered that the statement made in Dr. Snow's book is now obsolete, and since that time many important changes have been made in the best Static Machines, and speaking from a standpoint of the manufacturer, every machine that we now make is perfectly capable of serving its user not only with Static Electricity, but when

maybe you will find out something good. In the answer to a similar question in the last issue no definite address was given. Now we would suggest that you both make your wants known to E. B. Meyrowitz, 104 East Twenty-third street, New York City. If they have none in stock they can make them.

What kind of cases are you expecting to treat?

A Research Laboratory of Physio-Therapy.

To the Editor:

September 24, 1910.

Congratulations are surely in order for your excellent journal which you are giving the medical profession. It is filling a need long felt by those who are using modern methods in the treatment of diseased conditions. Those of us who have had several years experience with this newer therapy especially appreciate its helpful suggestions.

In connection with your journal may I suggest that you champion a new cause, viz.: The establishment of an endowed Research Laboratory of Physio-Therapy in connection with a large hospital where clinical material is abundant, where all mechanical and electrical apparatus would be tested. (1) The exact measurements taken in a completely equipped testing laboratory. (2) The physiological action noted on animals. (3) The exact action noted on the healthy human being. (4) The exact curative effect, dose, length of treatment, etc., noted; and last but not least (5) All new apparatus to be submitted and thoroughly tested before preposterous claims could appear in a medical publication.

Such a laboratory would be of inestimable value both to the suffering public and to the physician seeking exact results in the most accurate and scientific method of treating pathological conditions.

ARTHUR W. YALE, M. D.,
Philadelphia, Pa.

QUERIES

The Use of the Sinusoidal Current.

Will you please indicate the use of the sinusoidal current? I apprehend that this current is as little understood as any and an exhaustive article would be appreciated by many.—W. D. Vedder, M. D., Wellsboro, Pa.

The sinusoidal current is one of the most useful of the various electrical modalities that we at present have access to. By its instrumentality it is possible to cause muscular contractions of a more nearly normal type than with the faradic or interrupted galvanic. The excellent magneto-electric apparatus originally devised by Dr. J. H. Kellogg of Battle Creek shows great uniformity of action in the wave current produced.

Aside from the beneficial effects evidently due to the exercise given to the muscles treated in this manner, the sinusoidal current may be used with advantage in stimulating intestinal action, digestion

and metabolism. In the last issue of *PHYSIOLOGIC THERAPEUTICS* (pages 183-4) the advantages of this current in Uterine Atonia were mentioned.

As requested an article on the therapeutic possibilities of the sinusoidal current will be prepared and offered in our columns within a few months.

The Hydrotherapy of Prostatic Enlargement.

Please give a brief outline of the hydrotherapeutic treatment of prostatic hypertrophy.—J. S. W., Texas.

The sitz bath is an excellent measure here. Prescribe the bath at 105° to 110° F. for two minutes followed by the prolonged tepid sitz bath at 70° to 80° for fifteen or twenty minutes. This treatment may well be carried out each evening and morning for several weeks.

The hot rectal irrigation is another excellent measure.

Where there is access to a well-equipped institution the "up-douche" is another valuable measure. General eliminative and tonic hydrotherapy may be added to the above with much advantage.

Foods With a Digestive Action.

Are there any foods, proprietary or otherwise, which when eaten have a digestive action on other food that may be taken at the same time?—H. F. M., New York.

Yes, there are several. Pineapple juice is known to have slight digestive powers, although it is not believed that the addition of any ordinary amount of this juice to a meal would make much difference to digestion. It must be evident that the principal influence that a food-digestant could have would be in the conversion of starch, as any animal ferments that may be present in such foods (?) as tripe, sweetbread, etc., are either destroyed by cooking or unable to act in the stomach.

Among the proprietary foods we believe that Borden's Malted Milk and Mellin's Food both have a noticeable digestive action due probably to malt ferments which have not been destroyed in the processes of manufacture. This has been noticed by several pediatricists and the change from either of these foods to others of supposedly similar nature has inaugurated an indigestion.

Malt extract, a drug rather than a food, has, of course, a decided diastatic action if taken during or after meals.

Predigested Casein.

I have noticed that cow-milk-casein seems to be quite difficult of digestion for many small stomachs. Do any manufacturers of prepared milk foods predigest this element in their process?—H. F. M., New York.

This we cannot well answer, and the lateness of the date precludes the possibility of our writing the manufacturers. The attention of such manufacturers as Mellin, Horlick, Borden, Just, Eskay, Denny and others will be called to this and undoubtedly there will be an abundance of information in an early issue.

THE EDITOR'S PERSONAL PAGE

THE FORUM.

Did you read the editorial entitled "Static Coil or Generator?" on page 191? Maybe you are not an X-ray operator and were not especially interested. Take my advice and read it anyway and get interested in the new department. What shall be the next subject for discussion?

* * *

THAT SPECIAL ISSUE.

'Say, Doctor, I wish you knew how hard I'm working on the special New Year's number of *PHYSIOLOGIC THERAPEUTICS*. It's going to be the best number I've printed.

Why not send me the names of a few men—*select* ones, mind you—to whom I can send copies with your seasonable greetings. I'm sure they'll be pleased—and so will I.

Read the notice on page i and xxi.

* * *

I want every reader of this issue — subscriber or not — to think of at least one friend to whom I could send the extra special New Year's issue of P. T. Take my word for it that it's going to be something great; and you'll be glad to have the chance to send it. I want to make the double expense of this issue as good an investment as possible and am preparing a card to accompany the copy sent to each prospective subscriber. Here's a picture of it.

Won't you let me have your list within November? This means a lot of extra work so give me as much time as you can. Thank you.

* * *

A WORD ABOUT THE ADS.

Do you realize just why I'm "making such a fuss about the ads," as one expressed it? The success of this department is a very vital factor.

By answering an ad. you are doing three things: Laying yourself open to learn of something that may be of real help to you; giving the advertiser a chance to acquaint you with his wares; or wares; and last, but by no means least, helping me a deal more than you imagine.

—You know what I want you to do!

THE QUERY DEPARTMENT.

No part of this journal can be made of such personal value to you as the Query Department. If you want to know, you can learn it there. Don't overlook the fact that the answer to a query originating with you may be just the thing someone else wanted to know. This very thing is the essence of the reason for the success of *The Medical World*. Doctor Taylor has a "heart-to-heart" journal.

I'm not a bit ashamed to tell you that in this department at least, I want to emulate his example.

What can we tell you?

* * *

THE PHYSICIANS' BUSINESS JOURNAL.

I spent a delightful time in Philadelphia with my friend Doctor Thatcher. He assured me that advertising in P. T. is all right and backed it up by showing me a big bunch of inquiries on which had been written "as advertised in *Physiologic Therapeutics*."

(I was so pleased to see those words!)

Doctor Thatcher's new journal is something you really need. It

will surely interest you as it concerns the dollars and cents end of your work. Subscribe for *The Physician's Business Journal* now.

* * *

We recently learned that the Victor Electric Company had increased their capital stock to \$330,000.00 and were building them a new home. We offer our congratulations.

Such growth is only made possible by the kind of goods they make. They are dependable and absolutely reliable. We are glad to number them among our advertisers.

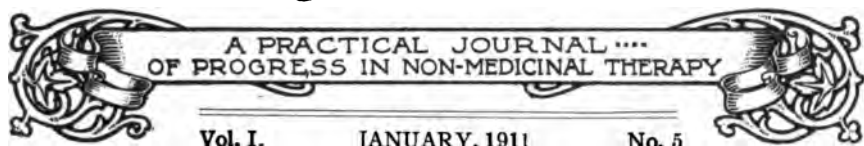
* * *

To close. Will you not BOOST A BIT? I am looking with a microscope for subscribers and advertisers. How would you like to place me in communication with some prospects, or even "land" them yourself? Thanks in advance for your co-operative helpfulness.

Henry R. Harrower.



THE AMERICAN JOURNAL OF
Physiologic Therapeutics



EDITORIAL

PHYSIOLOGIC THERAPEUTICS.

Physiologic Therapeutics! A term to conjure with. Opening up a field so vast and pregnant that the future alone will suffice to gather its boundless harvest. All that the present generation can hope to do is to pluck a few of its first-fruits—albeit we are already enriched by its partial fulfilment, and heartened by its promise.

A new word in the vocabulary of medicine—implying some correspondingly new and radical element, either in our concept of therapeutics, or in our available resources, or both. A term which, if it have any real significance at all, must stand for a fresh hold upon the problem of disease and its treatment, more or less effectual according to the more or less comprehensive scope which the new therapeutics proves to possess.

What, then, is Physiologic Therapeutics? Is it, as so many idly regard it, the mere addition to our armory of a new group of *materia medica*, whose sole characterization consists in their distinction from drugs? Or does it represent some new and basic principle in the science of therapeutics, of which these drugless agents are the concrete and special exponents? Some new strategic position in our attack upon disease, to which these new drugless weapons are best adapted? It is a question worth raising and determining. Did the introduction of the drugless remedies give rise to the classification of physiologic therapeutics, or did the conception of a physiologic principle of therapy call forth the drugless agents? In the former case, the classification is likely to prove artificial, and the mode itself short-lived. In the latter, both classification and mode constitute a real and permanent step in the march of medical science, a progressive stage in its genuine evolution.

The modern conception of disease regards it no longer as a concrete entity, to be forcibly "driven out" of the system; nor as the ob-

jective clash of contending elements across the passive arena of the patient's body; but as the interplay of action and reaction between the whole organism and its environment—a dynamic affair of perverted reaction to stimulus. Under this conception of disease, it is inevitable that our conception of therapeutics should become similarly dynamic and reactionary. Rational therapy no longer aims to force action, whether of drugs or of anything else, upon the organism, but to arouse proper reaction within it, in which the whole organism must participate. This is Physiologic Therapeutics in its broadest and profoundest sense. And it calls forth, as its *materia medica*, every means and agency which experience has shown certain, or reason renders likely, to bring about such desired and adequate reaction.

It is not denied that drugs may, and in many instances do, come within the range of this conception of therapeutics. Certainly there is no intention of suggesting that therapeutics can dispense with drugs—not in our lifetime, at all events. But there are several reasons why drugs do not most fitly represent, or most readily identify themselves with, dynamic therapeutics. For one thing, we have used them so long for their pharmacological effect, that practically all of our drug therapeutics must be learned over again to adapt it to dynamic therapy. For another, our control of drug action, while it is much more accurate than it used to be, is still, and must in the nature of things continue to be, too uncertain to compete, in physiologic results, with the drugless modes. But of far deeper import yet is the fact that drug therapy does not represent the same degree of proximate principle in therapeutics that these other modes do. That is to say, the latter constitute a group of therapeutic agents “existing ready formed” (as we say of chemical proximate principles) and available for application by means which do not alter or destroy their complex unit of potentiality.

The whole future of therapeutics is without doubt a question of body defense—in which are to be included, not alone the phagocytic defenses of the blood, as exemplified in the sera and vaccines, but all the natural or acquired processes of functional reaction by which the organism, or any part of it, defends itself against disease and death. This is Physiologic Therapeutics, in its broad intent. It is not a mere arbitrary fad in medicine that has created a new class of *materia medica* and labeled the “physiologic methods,” in distinction from drug remedies; not a passing vogue that has given these methods currency. It is that, in the unfolding of the new dynamic concept of disease, and the consequent search for a corresponding system of therapy, medicine has been obliged to transcend the realm of drugs and to cultivate a field of therapeutics which afforded, as stated, a more proximate principle of dynamic reaction. And this field consti-

tutes the class of so-called drugless or physiological remedies.

We do not belittle the place of drugs in medicine. It is probable that they will play an important role in therapeutics. But we unhesitatingly predict that the principle of Physiologic Therapeutics, as we have briefly tried to expound it, will dominate the spirit and practice of the medicine of the future—even of the near future. It already prevails to a much greater extent than is generally realized. Of that, however, the future itself will speak. If we have made clear the truth that the modes and agencies of therapy for which this journal stands are not, as some are lightly disposed to characterize them, fads or vogues, or even ephemeral phases of medical science, but the normal, inevitable outcome of the modern concept of disease and treatment—not grafts (in any sense) upon the stock, but the latest and most vital growth from the parent stem—our purpose is accomplished.

SOME THOUGHTS ON CLIMATE.

Our views as to climate have undergone changes corresponding to the progress in medicine. The tropics were considered as fit only for the dark-skinned races. We know now that the white man can successfully fight the diseases peculiar to tropical countries. Yellow fever has lost its terror; malaria can be avoided; vaccination gives protection against typhoid. The spirilloses yield to treatment and the plague will never again devastate Europe.

Many are the diseases yet unknown to us, and conditions favorable to and shielding man's enemies cannot be changed at once. Even if thousands of explorers and pioneers, thousands of missionaries and travelers, will yet fall victims, they are not victims of the climate, they are victims of temporary conditions which the white man, in the course of time, will overcome.

Climate exerts certain influences which can be utilized for therapeutic purposes. Certain climatic conditions are unfavorable for certain pathologic states, already existing or developing. The healthy individual, and "healthy" means to be free from organic lesions of all the *vital* organs, can exist in any climate provided he avoids functional disturbances within, which will reduce his resistance.

If we look into the real causes of the so-called "unfitness of the white for the tropics" we soon discover that Bacchus and Venus are mostly to blame. With the plasmodium-carrying and the yellow-fever-inoculating mosquito lurking about, the named deities badly repay their worshipers by creating a "*resistencia diminuta*."

It is said that in the tropics the Caucasians do not propagate beyond the second generation. This is partly true; but many of the

race-destroying miscarriages of white women in the tropics are of luetic and malaric origin and therefore not necessary. It is far more frequent that the *treponema pallidum* does its deadly work than the rays of the sun or the emanations from the jungle. The young white who undergoes a thorough course *in venere* has his seminal vesicles unfit for their proper role, and the bride, selected and wedded on a trip home, often after a short course of treatment, will be sterile, not so much by the plasmodium but by the gonococcus.

We, who have spent some time in the tropics, often use the climate to cover up what is only the sin of the youth brought home to the man.

Generations of white men have existed and exist in the tropics. In tropical America we find localities where the blood of the Spanish *populadores* of Gothic descent has remained pure and the vigorous, fine, blond types are a surprise to the traveler.

Mission societies yet labor under such misbeliefs. We see the notice in the medical press that there are many vacancies. They demand *young* men for their fields. There may be many reasons, especially for the preacher, who must master the language most profoundly; but there is no such reason for the medical man who is qualified to learn the language, perhaps has mastered it already, and has reached the middle life. Middle aged men, even those past middle age, have done good service for many years in other capacity in the tropics, why should the physician not do the same?

* * * * *

The fear of high altitudes is disappearing on this continent. The sight of a venerable matron and her open flask, when nearing the high passes, is becoming quite scarce. The number of the poor lungers who go to the Rockies-or desert with the medical advice to "rough it out," are less every year. While the value of high altitudes in the treatment of tuberculosis remains a well known factor and while the scientific reasons and foundation of such treatment are more recognized and understood, it is a blessing for the citizens of the southwest that the belief, that mountains can perform miracles, is waning more and more, and it is a blessing that the indigent tubercular is allowed to die in peace at home.

FEST.

ANTITYPHOID INOCULATION IN GENERAL PRACTICE.

For more than seventeen years the matter of the use of bacterial products in the treatment of typhoid fever has been under discussion. Since Fraenkel's first article in 1893 hundreds of articles and reports have appeared, and today the fact stands out in bold relief that in the biologic preparations of the *Bacillus Typhosus*, and more espe-

cially the typhoid vaccine (Typho-Bacterin), we have a therapeutic agent of unquestioned merit.

Since typhoid fever is an epidemic disease and such a common scourge during war, much of the investigative effort has been accomplished under the supervision of several governments and health bureaus. The immense amount of statistics which have resulted ought surely to be enough to convince the most confirmed skeptic.

To put the facts as briefly as possible prophylactic inoculations of typhoid vaccine have made a noticeable difference in both the incidence of the disease and its mortality. We quote from the best brochure on this subject which, to our knowledge, is at present obtainable:* "The following conclusions seem to be justifiable:

1. Inoculation against typhoid undoubtedly protects against the disease to a very great extent.

2. It is an indispensable adjunct to other prophylaxis among troops and others exposed to infection.

3. It is very doubtful whether there is an increased susceptibility following inoculation.

4. Therapeutical inoculation during the course of the disease fails to reveal any evidences of a negative phase.

5. The statement that inoculation during the presence of an epidemic should not be carried out is not justified by facts.

6. The procedure is easily carried out, and only occasionally provokes severe general reactions.

7. No untoward results have occurred in 6,340 inoculations reported."

Not only may typhoid inoculations be used as a prophylactic measure, but also in the actual treatment of the disease. Manifestly there has been no opportunity to collect the thousands upon thousands of reports that are to be found in the literature on the prophylactic use of this remedy; but results in many hundreds of cases should serve at least to stimulate an interest among the rank and file of the profession in the most sensible remedial agent we have in the treatment of typhoid infections.

They also quote Dr. E. E. Allen as follows: "I will say, however, in the light of my experience, that were I now entering upon another three months' service I would unhesitatingly give every case the benefit of the opsonic treatment at once, administering no other remedy until it was demonstrated that the case did not respond. As I watched the progress of these cases I found myself relying more and more upon this new method. It was a very unique and interesting phenomē-

*Mulford's Working Bulletin, No. 6.

non to me to see repeatedly apparently serious cases of typhoid fever, presenting all the usual symptoms, rapidly overcome them and in a few days change the whole complexion of their illness for the better, going on to a rapid convalescence. After but one treatment some of them began immediately to improve in every respect. The fever became less, the headache and backache disappeared, the tongue cleared up and they began to complain of hunger. Most of them would say, if asked, that they felt better and that, also, very soon after the initial treatment. About 75 per cent of all the cases were favorably influenced."

Only one other point requires mentioning, and that is the influence of typhoid inoculations upon "typhoid carriers." Many an individual is a walking menace to the community, and anything that might be used to relieve them from this chronic infection and at the same time preclude the possibility of continually reinfecting their associates, would, without a doubt, be a God-send. The amount of work done along this line is decidedly limited. Typhoid carriers are, fortunately, not so very common, or, unfortunately, not so easily detected; but one or two cases worked out and reported ought to be sufficient to base statements upon. Houston, writing in the *British Medical Journal*, reports his observations on three cases, one of which is both interesting and encouraging. He gave the patient doses of 50,000,000, 100,000,000, 200,000,000, 300,000,000, 500,000,000 and 1,000,000,000 bacilli, progressively increasing at intervals of three weeks. During this time the weight returned to normal and the health, which had not been good since the attack of typhoid fever, two years before, was completely restored. At the same time the typhoid bacilli disappeared from the stools and from the urine.

To sum up the typhoid vaccine (Typho-Bacterin) is a potent prophylactor and therapeutic agent. The only reason, as we see it, that it is not more universally used is that *the majority do not know of its virtue*; it therefore becomes our duty to disseminate information which we believe carries with it immense possibilities for individual and communal good.

You cannot kill time without
injuring eternity.—Thoreau.

* * *

It is half way to knowledge
when you know what you have to
enquire.—Aristotle.

A PLEA FOR FAIR PLAY.

When a periodical with the standing of the *British Medical Journal* has for a leading article a favorable treatise upon osteopathy and a recital of cures of "incurable" cases by this method in the hands of a prominent physician; when an institution with the fame and conservative traditions of the Massachusetts General Hospital appoints an osteopath to its service, and when a national medical organization invites an osteopath to address one of its meetings, it would really seem that the time had come for the general practitioner of medicine to look at this matter fairly and squarely.

We do not mean that we believe in osteopathy any more than in any other "pathy." The day of therapeutic *beliefs* is past. This is the day of *facts* and of a thorough scientific search for facts. Because of this the attitude of institutions, medical journals and physicians is changing, and those who are consistently scientific and humanitarian are no longer afraid to recognize a truth and a help, even if it be labeled "osteopathy," or, for that matter, anything else. Osteopathy has its faults, but so have we. Osteopathy may have more faults than any other school of practice. What if it has? That is hardly the point. The point is that the osteopaths have proved that they can do some things better than they have been done heretofore; therefore, we suggest that the family physician avail himself of this fact in his work, and utilize the osteopath when indicated, just as he does the surgeon, the dentist, the oculist, the orthopedist or any other specialist. It is sometimes argued that many osteopaths are ignorant, but ignorance is not monopolized by any school of practice, and competence may be discovered in their ranks by the same method you would use to decide upon your surgical consultant.

In these days of drug nihilism it is refreshing to find positive therapeutics, and while few of our readers would be ready to accept the osteopathic theory as a whole, it would not be inconsistent with the tendency of the times for every physician to look into osteopathy with an open mind and try to discover why it is receiving the recognition in high places which is today being accorded to it. If you are shocked to read such as this here, read the title of this publication, think it over carefully and without bias, and then ask yourself frankly if it is inconsistent for a magazine with this title to insist upon its honest search for therapeutic truth *no matter in what field it may be found*. We are not hereby committing ourselves to osteopathy in the least degree, nor are we endorsing it in any way. We ask for frank recognition of whatever is scientifically true—for "fair play."

A NEW FOOD.

Not long ago our attention was attracted by an excerpt from a Texas daily reprinted in a recent issue of the *Texas State Journal of Medicine*. We print it here as an item of more than passing interest:

Cotton Seed Flour a Food Product.

Dr. George S. Fraps, state chemist at the Agricultural and Mechanical College, has determined that cotton seed flour made from cotton seed meal can be used as a human food. It is a meat substitute and not a flour substitute, and should be used mixed with other foods. Cotton seed flour has a bright yellow color; a pleasant odor and a sweetish taste. In chemical composition it resembles meat more closely than does wheat flour, and is in fact quite different from wheat flour. Cotton seed flour contains more than twice as much protein as the meats. A careful examination of the table will show that it is due to the water in the meats.

	Protein.	Fat.	Starch, etc.	Water.	Ash.
Cotton seed flour.....	48.25	12.16	22.85	7.21	5.58
Beef flank	19.61	21.10	59.30	0.90
Eggs	11.60	8.60	67.20	0.60
Wheat flour	11.40	1.00	75.10	12.00	0.60
Rice	8.00	0.30	79.00	12.30	0.40

A portion of cotton seed flour contains over twice as much portein as eggs and about the same quantity of fat. It contains over four times as much protein as wheat flour. Wheat flour, however, contains considerably more sugars and starches. Thus wheat flour is a different kind of food from cotton seed flour.

There is no question about its wholesomeness but the quantity to be used must be determined by experience and experiment. It is very rich, and it will be an easy matter to eat too much, and for that reason it should be used only as a mixture with other flour, at the ratio of not less than four parts of wheat flour to one of cotton seed flour.—*Fort Worth Record*.

It occurs to us that here we have a foodstuff that may in time become a valuable and widely-used article of diet. So far as we are aware the principal use to which cotton seed has been put, aside, of course, from the natural use, is in the production of cotton seed oil and cotton seed cakes for cattle. Little, if any, attention has been called to the food value of cotton seed meal for human use. At all events we shall hope that some enterprising investigator or manufacturer will take up the study of the possibility of producing a palatable and digestible food product from the cotton seed.

A DELINQUENCY.

The medical profession needs something to awaken it to a realization of the danger of its present attitude of apathy toward the true science of dietetics and the untold results of digestive disorders.

The various illogical healing fads—Christian Science and all of the other cults—as well as the patent medicine evil, can all legitimately be charged to this neglect to study diet from a rational viewpoint. Inebriety, incorrigibility, criminality, insanity and the deplorable state of civilized man's health are, in our mind, the legitimate results of a long-continued stimulating diet. Against this the medical profession as a whole has not raised one timely word of warning.

A recent visit to the Colorado State Penitentiary showed, without exception, among the inmates a false activity of body and mind that can only result from a long-continued, daily overstimulation of the body, which, no doubt, began in infancy and continued unremittingly through childhood, adult life to old age. As night and day follow each other in unvarying alternation, just so stimulation and depression alternate; and each time the stimulant must be increased in potency in order to temporarily overcome the loss of power. Personal investigation and experience teaches us that physical well-being and morals should be studied from the standpoint of osmotic tension. Foods that increase osmotic tension are artificial stimulants and their use can only result in a wasting of the vital forces and in shortening life.

The successful dietitian of the future will have a close knowledge of the saline content of the various foods and will regulate their administration with a close eye on this important factor. There should be no reluctance to study diet from this standpoint. Without a doubt the mineral constituents found in our foods exist in definite proportions, and our diet studies might well recognize that proportion in food selection. It is self-evident that the normal ratio cannot be exceeded without interfering detrimentally with osmotic conditions that are essential to proper cellular function.

The general indisposition of medical men to direct their attention to this phase of the diet question is remarkable, in view of the enormous effort expended in classifying and elaborating the effects of malnutrition.

We insist that health cannot be maintained on a protracted diet that is richer in the salts than mother's milk.

BEESON.

**"The world will stand aside for
the man who knows where he is
going."**

AN INVITATION.

I have a friend who is a medical missionary in China. Since the publication of the last number of *PHYSIOLOGIC THERAPEUTICS*, word has come telling in graphic language of the unfortunate results of an uprising in the province of Chang-Sha. "By far the greatest loss was the destroying of our medicines and medical implements," writes the doctor.

Now just suppose that you were out in a foreign land with your medical supplies suddenly cut off and no money to replace them. how would it feel?

How many readers of *PHYSIOLOGIC THERAPEUTICS* would like to help me to gather up enough to restock these important supplies? I have already made arrangements with several supply houses to give me the goods at actual cost. What do you feel disposed to do?

If every reader would give a quarter there would be five times as much as would be needed. Would you be willing to send me a dollar?

HARROWER.

DIET IN CANCER.

The last number of *McClure's Magazine* contains an extremely interesting article on Paul Ehrlich and his work, written by his assistant and authorized by himself. This is the kind of reading that we can cordially recommend.

In this article is the first report of some cancer research work which Ehrlich carried out late last year. He first found the smallest quantity of the foods of various kinds upon which a mouse could subsist for several weeks. After several days feeding upon this minimum amount the mice were inoculated with cancer cells, and it was found that whereas a tumor grew at once in mice whose diet consisted of meat and fats, that it did not grow on those fed with cereals, as rice.

It was also found that if mice that already had a tumor were fed with rice, the tumor would cease growing and, in some cases, degenerate.

One need not overestimate the value of this work to see that it is more than suggestive as to the part that a regulated diet may play in the future treatment of cancer. It clearly indicates, what many have believed, that cancer is to a large extent a disease of over-nutrition.

This is in harmony with the observations of the late Nicholas Senn, who, in his investigations in Central Africa, found practically no cancer among certain tribes noted for their moderate eating.

AN APOLOGY.

The editor has promised readers of *PHYSIOLOGIC THERAPEUTICS* an article entitled "The Equipment of the Small Sanatorium," and regrets that it cannot be printed in this issue. He has spent considerable time in collecting data and prices and expected to be able to have it ready in good season. Plans for treatment rooms have been prepared and are ready reduced for printing, but the immensely increased work of preparing this double number and the already overflowed pages preclude all possibility of keeping the promise now.

It will appear later *and will be worth waiting for.*

He who dreads new remedies
must abide old evils.—Bacon.

* * *

"A thread will suffice to hold a
man who thinks that it is an iron
chain."

* * *

Common sense is called com-
mon by common consent, but it is
the scarcest commodity on the
market.—Edward Everett Hale.

* * *

Let no knowledge satisfy but
that which lifts above the world,
which weans from the world,
which makes the world a foot-
stool.—Spurgeon.

* * *

The greater a man is in power
above others, the more he ought
to excel them in virtue. None
ought to govern who is not bet-
ter than the governed.—Publius
Syrus.

* * *

"There is nothing, sir, too little
for so little a creature as man. It
is by studying little things that
we attain the great art of having
as little misery and as much hap-
piness as possible."—Saml. John-
son.

ORIGINAL ARTICLES

PHYSIOLOGICAL MEASURES IN THE THERAPEUTICS OF NERVOUS DISEASE.

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Member Assoc. Soc. Clin. Med. Mant., France, etc.

The purely empirical concept of disease and its treatment which formerly was so general is responsible for the relegation to charlatans of many useful measures which were not taught formerly in the medical schools.

Now, it should be manifest that all disease and all treatment should be regarded in terms of departure from correct function, and all remedies should endeavor to restore healthy function. When the cause of disease can not be removed, its consequences may sometimes be offset. The drugs which do this are often deleterious otherwise, either by interfering with nutrition, disturbing metabolism or poisoning the nerve or muscle cells.

One can not object on these grounds to the regulation of bodily functions known as Physiologic Therapeutics, for only obtuse empiricists will do serious harm in using agencies which are nature's own. The number of such men diminishes in proportion to the opportunities for receiving instruction in the nature of the processes which occur in the body in health and disease. In other words, the only safeguard against harmful treatment of disease is a knowledge of living function in health and disease.

This consideration is particularly pertinent as regards the diseases of the nervous system, for in no branch of medicine has there been applied so little of the penetrating intelligence and clarity of view which now distinguishes work in many other fields. But recent neurological labors have supplanted confusion by precision; and the processes at the root of many nervous perturbations become clearer every day. The so-called auto-intoxications, the disturbances of the internal secretions, the serious effects of purely psychological attitudes, and the rôle of the infections have each contributed to eliminate from nosology such an *olla podrida* as Beard's neurasthenia and such a vague and largely artificial disorder as was hysteria as formerly conceived.

Of a thousand "nervous" cases, about eight hundred were at one time classed as "functional," and were relegated to a purely empirical therapy. No attempt was made to penetrate the pathogenesis of these conditions. But they were shot at with a blunderbus in the hope that one of the missiles might bring down the morbid agent.

Hence, the general insistence upon *all* the elements of a course of treatment, which comprised rest, massage, exercises, baths, electricity, occupation, encouragement and that unprescribable quantity—the personality of the physician. This often succeeded where the pharmaceutical blunderbus had failed. It is small wonder, for the pharmacodynamics was applied in the very direction to do most injury to the patient; for instance, the giving of bromides to patients whose agitation was in reality due to impaired efficiency of the cerebral cortex; the giving of strychnine in fatigued states, where cells required rest and not whipping; the producing of sleep by narcotics, when the need was oxidation rather than stupefaction; the prescribing of so-called anti-spasmodics in cases of which the pathogenesis was purely psychical and where the physical results were best treated when most ignored.

But of the physiological means, none in itself was out of harmony with the needs of the organism even in health; oxidation was stimulated by baths and massage; fatigue was diminished by rest; tranquility of mind was given by abstraction from cares; intoxication was diminished by an appropriate diet, etc. Only the cause of the disease escaped attack: the patients were not taught the reason of their illness, nor how to live in the future; hence relapses were frequent.

To avoid the discredit of such failures, the pathogenesis of every case should be kept in mind during its treatment. Thus, it is folly to prescribe a course of eliminative baths and electrical calmatives to a patient whose symptoms clearly arise from an ill-balanced dietary. The proper treatment is to remove the cause by prescribing a proper diet, and to teach the patient how to keep well by controlling his food. Again, douches to the spine and static electricity are not only useless, but even tend to perpetuate the disorder of a patient whose symptoms have a psychological source. Still worse, a so-called rest cure may be of the greatest injury to a patient whose mind is obsessed by some trouble which is the cause and not the effect of the physiological break-down for which advice is sought.

In the space allowed me, it is impossible to discuss even the generalities of neurological pathogenesis. It is a study in itself, and its determination in each case comprises a large part of the art of the neurologist.

The rest of the paper will be devoted to a short consideration of the applicability to nervous disease of individual physiological measures.

Diet.

(1) *Proportions.* Imperfect metabolism creates many neurotic conditions. Hence the exchanges should be studied in each case. An

exacerbation of phobias and emotional agitation is often determined in a psychasthenic patient by a series of meals, especially in the evening, of which the proportion of protein is too great. On the other hand, too low a protein ratio produces a psychasthenic depression in the patients. The stimulus to oxidation afforded by exercise should both precede and follow any large intake of protein by such patients; so their chief meal should be at mid-day.²

In all patients susceptible to intoxication, the saline element of the food should be abundant, and fruit should be a main part of the dietary. This also aids in preventing the constipation which so often aggravates the neurasthenic symptoms of these patients, giving rise to lethargy and aboulia. Fibre and cellulose should be abundantly taken also. The giving of large amounts of fat and proteins to these patients is not to be recommended, for it is tolerable only when specially compensated by the repose, freedom from care and physical measures of the Weir-Mitchell treatment, and that only for a time: while the stresses of life soon put an end to the tolerance of what was not at all necessary. When required, weight can be gained less rapidly and more permanently by a properly balanced ration.

(2) *Purity.* In these days of adulteration, the greatest care cannot be taken to obtain food neither coarse nor impure. The slow intoxication by foods decomposed in storage must be injurious to many patients; and the addition of preservatives is to be still more strongly deprecated.

(3) *Flavor.* As Pawlow has shown, rapidity of gastric flow is greatly influenced by enjoyment. As it is the gastric juice which destroys the organisms of fermentation, any delay in its secretion must be detrimental to patients with feeble digestions or of poor nutrition. Hence the food should be tastefully prepared and flavored, when the demands for this are not inconsistent with physiological well-being; as, for example, by the craving for pickles, salt, mustard, pepper and spices in excess. As important to many susceptible individuals are the service, surroundings and company at meals, for it is well known that displeasing *affects* inhibit the flow of digestive juices.³

Exercise.

This is of paramount importance for the rectification of disturbed function. I need not speak of Fraenckel's exercises for restoring locomotion in tabetics. These are in reality reëducation rather than pure exercise. I wish, however, to emphasize the importance of persistent exercises in the treatment of paralysis:

(a) Even in the lower neurone palsy of poliomyelitis, the perseverance in movements makes a great difference in the functional capacity of

a paralyzed limb. Again, in hemiplegia, the patient is often surprised at the capacity gained by exercising a limb he believed to be useless.

(b) The exercises required for reëducation of aphasics may be included here. The physician will nowhere find need of more intelligence and perseverance. His success will be proportional to these qualities.

(d) The abnormal movements known as tics, *e. g.* torticollis, generally require for their suppression a series of exercises to be taught and directed by the physician and practiced by the patient.⁴ Mere empirical prescription of these will, however, fail; for the cure depends upon the understanding of the pathogenesis of the disorder, and upon the physician's placing the patient under conditions and seeing that he carries out the instructions to prevent its recurrence.

(e) The same considerations apply to the exercises required for the removal of stammering and writer's cramp and the occupation neuroses. In these conditions, it is even more important that the patient himself comprehend the pathogenesis of his disability. Psychoanalysis will reveal this to the physician, who can then instruct the patient. In a forthcoming paper, I describe the means by which three cases of this kind were restored to industrial efficiency, thanks to the discovery of the pathogenesis by psychoanalysis, and the removal through this of the difficulties which hindered the exercises needed for reëducation.

I need not insist upon the power of proper muscular exercise in aiding metabolism by promoting digestion and elimination, and of its effect in aiding the cardiac *vis a tergo*. It is most important when depletion and fatigue are greatest, a fact rarely realized in nervous affections, although in cardiac disease there is so brilliant an example of the benefits of graduated exercise. Frequently the neglect of proper exercise is responsible for the failure of treatment otherwise well ordered towards remedying an affection of the nervous system.

Massage.

To remove catabolic substances stagnating in the lymphatics, massage is perhaps the most powerful means; in this way it stimulates nutrition. But besides this, it has a soothing effect, perhaps through stimulating afferent nerves. It has no power of restoring dead tissue, and its power of removing exudates is accounted for by directly hastening the circulation through the veins and lymphatics of the part, and the indirect effect of this upon the arteries supplying the part and upon the rest of the body. In lower neurone paralysis, it has no direct influence upon the restoration of structure; and it merely compensates for the normal stimulus given by the movements of the limb to the lymphatic and venous circulation.

The squeezing of the muscles in massage is easier borne and can be more easily graduated in painful peripheral affections than can ac-

tive muscular contractions; but gradualness and a very fine touch are essentials. Furthermore, the operator should work *en rapport* with the patient, so that the inevitable pain should not reach the limit of endurance. The recovery of sciatica, even when it is due to a definite neuritis, is sometimes greatly accelerated by the stimulus to nutrition and the dispersal of microscopic exudates by skilful massage, firm and deep, although gentle. Some of the successes of osteopaths are probably due to the freedom with which they massage painful regions. I do not advocate, however, anything like the indiscriminate use of massage in painful conditions.

Baths.

The indiscriminate prescription of hydrotherapy in neurotic states has done much harm; and yet no measure has a more beneficial influence than a bath when prescribed in the proper situation. The calming influence of the warm bath in agitated mental states extends even to the insane. It should not be forgotten, however, that the effect of a bath is a physical one, and it should never be used for its so-called "suggestive" effect. The systematic use of the cold douche in treating hysteria is a barbarism. It is true that a cold douche may stimulate the attention; but it does so towards the unpleasant sensation of the douche and not toward the matter which causes the morbid symptoms. It is thus, if anything, harmful to the patient's mind; and this is hardly compensated for by any benefit to his body. The cold bath is indicated in certain neurotic states of which indolence is a feature; but it should be prescribed with the definite indication for removing lethargy, and should be supplemented by other methods with the same end in view.

I need not enter into the eliminative effects of warm baths, for they are well known; and I am not satisfied that the application of dry heat by air or electricity has any particular advantages over hydrotherapy in this or other respects, except perhaps when intense heat is required in a circumscribed region.

The use of the bath to minimize tension and strain of the muscles in the course of the meningitis of poliomyelitis must not be forgotten;⁵ and the suspension of the body in water, too, greatly facilitates the first feeble movements during recovery from that disease.

Electricity.

This has been the agent of more bunkum and charlatanry than all other physical agents combined. Even now, one hears apologies for the psychic effect of imposing apparatus. That it has a psychic effect is true; but it is the psychic effect of the quack. It is not an effect aimed at the origin of the disease, but to impress the patient with the power of the remedy, and to delude him into the idea that

he must be receiving benefit from so wonderful an agent. When his intelligence is thus obfuscated, he can be made to believe anything. A parallel is found in the procedure of a Christian Scientist, who by the mysterious agency of immortal mind wipes out of the patient the consciousness of every inconvenience which conflicts with that conception.

Electricity, like other remedies, should be used only with a clear object conformable with its physical properties. One of the most useful of these objects is the maintaining of life in muscles which would otherwise degenerate on account of injury or disease of peripheral motor neurones which supply them. Such are cases of poliomyelitis and of trauma of peripheral nerves. In each of these, the life of the muscles should be maintained by galvanism⁶ for perhaps a year, until it is ascertained what cells or fibres are definitively destroyed, and which of them can be restored to function. I can not speak from experience of the ability of galvanism to promote nutrition other than by the excitation of contractility; but many authorities believe that its intelligent application fosters regeneration of the tissues.

Rest.

I need not urge the utility of this much-used measure, I wish, however, to animadvert upon the prescription of rest until a clear diagnosis has shown that it is required. A false belief in one's own inability or exhaustion is a common defense against responsibilities requiring effort. A rest cure only perpetuates this antisocial attitude. The real need is reëducation and training to bear the task. Isolation may render this training easier in these cases; but it is rarely necessary and its merit consists of the removal from influences which would counteract the healthy tendencies to be aimed for.

Occupation.

All kinds of diversions have been prescribed in order to assuage the mental sufferings of nervous patients. These are only of temporary benefit; sometimes indeed they are injurious in keeping the patient's attention upon his health. When diversion from preoccupation is required, it is best procured by means of tasks to be performed rather for themselves than for health's sake. Productive and remunerative work is even better than hobbies in this respect. Many a patient has been pulled from the slough of despond by urgent material or social necessity. Indeed so often is this the case, that it was formerly thought erroneously that only the rich became "neurasthenic."

To impose work without discrimination would be harmful to some patients. Merely automatic performance does not meet the

needs of people who are beset by care, grief or anxiety. Work must be done with interest if it is to be therapeutic. The skill of the physician lies in adapting the task to the patient's capabilities and needs in this respect and increasing it with the growth of these until industrial or social capacity, partial or complete, is regained.⁷

Psychic Measures.

A thorough analysis reveals, as the cause of many neurological perturbations, notions of the world and one's own relation thereto, at great variance with fact. The frequent conflict of these with things as they are induces a train of disagreeable or painful feelings. These are sometimes suppressed into a melancholic or paranöic attitude towards the environment or towards oneself. Sometimes, on the other hand, the false beliefs are manifested in such disorders of the body as dyspepsia, genital difficulties, cardiac weakness, disorders of sensation and movement, and so on. Many of these conditions are legitimately named hysteria, in that the mental mechanism by which they arise and disappear may be described as suggestion, a hysterical symptom only being one "susceptible of production by suggestion, and of removal by suggestion—persuasion."

Affections originating in this way usually come early to the doctor; and the fact that many of them become chronic is due to his failure to appreciate this psychological mechanism. It is not enough to declare that a condition is hysterical, neurotic or psychic, unless the exact mode of psychogenesis is discovered. It would be as reasonable to expect intelligent treatment without this as to expect it from an internist whose diagnosis did not extend beyond such terms as heart disease, kidney disease, lung disease, or of a surgeon who is satisfied with a declaration of tumor, fracture, dislocation, without any examination concerning the nature or distribution of the disorder.

Even when the reprehensible and rarely successful effort to deceive the patient is not made (a treatment which can not be too strongly condemned), blundering attempts at suggestion by doctors ignorant of psychopathology are most injurious. They serve only to make the patient believe that psychotherapy is mere assurance, and that no one can comprehend their disease any more than they themselves can.

Real psychotherapy begins not by encouragement, but by enlightenment. The patient learns from the physician to understand himself; and the only physician who can teach him is the one versed in psychopathology. Encouragement should not be gained directly from the physician, but should come from the patient's own appreciation of his improvement and by his learning the fact that his affection is not so peculiar as he believed. I can not attempt to set forth here

even the principles of psychotherapy. The interested reader is referred elsewhere.⁸

Conclusions.

Let us conclude by naming the three factors comprised in this difficult art, and giving the parallel of surgery in illustration. The surgeon requires first, a minute knowledge of anatomy and pathology; secondly, the good sense to apply this knowledge clinically; thirdly, acquaintance with and a practice of technical advances in his art.

The psychotherapist requires first, a minute knowledge of psychology and psychopathology (I exclude here all metaphysical notions, which unfortunately are rife in much which has been written on psychological medicine); secondly, the acumen to use this knowledge clinically in diagnosis; and thirdly, an acquaintance with and the practice of technical procedures as they improve. The first and third of these requisites can be gained by any one; it is in the power of using the second that the highest qualities are required. In this art, physiologic therapeutics finds its highest expression; for in this more than any other, it penetrates to the cause of a patient's disturbance.

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THE HYDROTHERAPEUTIC TREATMENT OF SYPHILIS.

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This chronic infectious disease, "The Great Black Plague," is a specific germ disease, originating, usually from contact; has its period of incubation, and its orderly progression of symptoms both local and constitutional. One inoculation usually protects from reinfection. It is one of the curses of civilization. Its control and cure have been sought by some of the most brilliant minds of the medical profession. It is today in an attenuated form; so diffused through civilization is

the virus that to a certain extent, we are all protected from the terrific ravages that take place in tribes and nations who have never before been brought under its influences. Its lesions are inflammatory; cumulative, becoming destructive through pressure effects.

Fundamental Factors in Syphilotherapy.

Until the advent of the Ehrlich-Hata method, the writer held to the following opinion: That the disease or poison is not to be destroyed, but slowly and certainly combated by the continuous moderate tonic doses of mercury, just short of its physiological effects; that the action of this drug is to remove, by fatty degeneration, the syphilitic deposits; the drug not to be used in large antidotal doses, but as an eliminant and that the better the general health, the less influence the poison has upon the system. As the natural corollary of this proposition, we may say that Hydrotherapy in combination with anti-specific medication is the most promising method of treatment. Why syphilographers have given the hydrotherapeutic part of the subject so little attention, seems queer. The writer has seen many cases who were unable to take, assimilate, and utilize mercury, after a short preliminary bath treatment, receive all the benefits accruing from the specific action of this medicine. The writer believes that tonic hydrotherapy, that is cold water treatment, is far better than the usual spoilitative treatment by hot baths. The method he has pursued for years, and has found to be unusually satisfactory is the following: The rules and regulations that are to govern the patient are laid down; the frequency of treatment settled; tonic doses of mercury given; and hydrotherapy instituted. We may at once commence with the incandescent electric light bath, to the point of free perspiration, followed by the half bath at 70° F., for three minutes, with friction, applied by the attendant, to the parts immersed. The temperature of the bath is reduced 1° daily to 60° F., and each bath is finished by the use of an affusion to the back and chest at 60° F. By this time the patient's reactive power will be excellent, and we may proceed to the following full measures: The incandescent electric light bath to free perspiration; the horizontal rain or needle bath at 103 to 105° F., for one and a half minutes, reduced to 80° F., for one-fourth minute, pressure, thirty pounds; this to be immediately followed by jet douche to the spine and the fan douche to the body, at 60° F., for ten to twenty seconds, pressure, thirty pounds. Where the electric light bath cannot be secured, vapor, hot air or steam may be employed, but the incandescent electric light bath is the undisputed and leading heating method in this disease. The object in warming the patient up by the heating procedure is to enhance elimination and prepare him for better reaction to the application of cold water.

When the disease is mitigated and a period of latency occurs, it is an excellent plan to recommend to our patients to discontinue all medication, and spend from three to five weeks at the seashore, indulging in surf bathing. When the patient resumes a course of mercury after the various intermissions, he should always receive tonic hydrotherapy at the same time.

A Good Home Treatment.

Where patients have not access to a properly equipped institution, we may substitute in the home the following treatment: Hot air cabinet, in which the patient is to remain until free perspiration; or the full hot bath at 102 to 105° F. for five or six minutes; care being taken in both instances to keep the head cool. The heating measure should be followed by the cold sponge at 80° F., reducing 2° daily to 60° F., making the sponge or towel wetter and wetter as the temperature is reduced. Where it can be obtained, it is far better to use the ordinary shower, employing water at the same temperatures. The description of the various baths, douches, showers, etc., can be obtained from any text book on hydrotherapy.

CLINICAL PHYSIOLOGY OF THE STOMACH.

BY ALBERT ABRAMS, A. M., M. D., SAN FRANCISCO, CAL.

Late Professor of Pathology and Director of the Medical Clinic, Cooper Medical College;
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Scope of Clinical Physiology.

The final court of decree of the clinician is neither the physiologic nor the pathologic laboratory. In consequence of the conflict between the laboratory and the clinical investigator, a hiatus has arisen which is now occupied by clinical pathology, a branch which endeavors to conciliate scientific and empirical medicine.

The clinician no longer regards the pronouncement of the physiologist as apodictic, and he has learned to discredit many statements emanating from the laboratory investigator, not so much because the observations of the latter are faulty, but because there is a considerable difference between a laboratory and a bedside, and a guinea pig and a patient.

The writer proposes the term "*Clinical Physiology*," to designate the study of human physiology by clinical observations.

Physicians must awaken to the realization that progressive medicine is not wholly an achievement of the laboratory, and that the functional centers of the spinal cord may be stimulated and demonstrated with the same certainty in the living human subject as is done by the vivisectional experimentalist.

It is folly to subscribe to Moliere's satire: "The authorities exact an oath from medical candidates never to alter the practice of physic," or to the pessimism of Skoda: "We can diagnose disease, describe it, and get a grasp of it, but we dare not by any means expect to cure it."

Topography of the Stomach.

Many text books still show our traditional conception of the stomach as an organ horizontal in position, with the larger curvature as a deep pouch, and the pylorus only a little below the cardiac (transpyloric plane) orifice opposite the first lumbar vertebra.

With the advent of the Roentgen rays, our conception of the size and location of the stomach has been considerably modified and a Roentgenographic examination (with the individual standing) shows the normal forms of the stomach, according to Holzknacht and Rieder, as pictured here. (Fig. 1.)

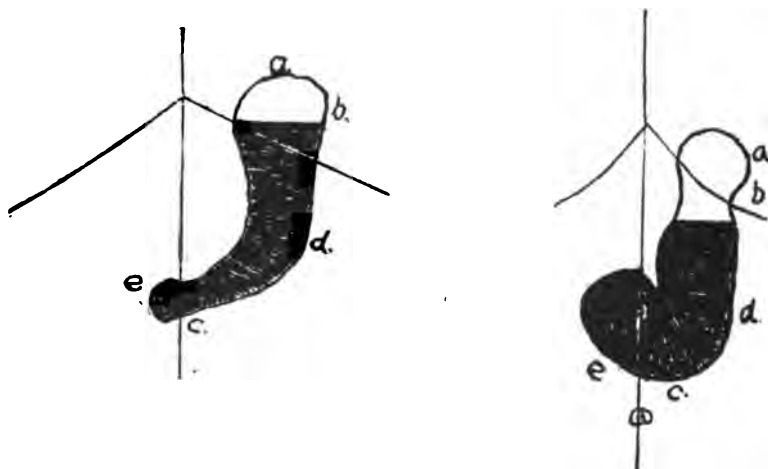


Fig. 1.—Normal Stomach of Holzknacht (illustration to the left), and Rieder (illustration to the right).

In the former, with dorso-ventral transillumination in standing and the stomach filled with bismuth, the pylorus represents the most dependent part of the stomach; a, cephalic pole; b, gas-bladder of the pars cardiaca (fundus); d, pars media (corpus); e, pars pylorica; c, caudal pole (identical with the pylorus). The stomach is ox-horn shape.

Vago-Visceral Method of Outlining the Stomach.

No gastrologist can lay any claim to distinction until he has devised some original method for defining the position of the stomach, and the result has been a number of complicated and, in some instances, faulty methods of examination. The writer contends that, any

one who is able to appreciate percussion-sounds can accurately define practically the entire stomach and this with less skill than is usually employed in outlining the borders of the heart.

The vago-visceral method, however, is only successful with the patient standing.

If, while palpating the radial artery, firm pressure is made in any intercostal space, the radial pulse becomes slower or, is even inhibited. The latter phenomenon is caused by reflex stimulation of the vagus.

If one percusses the gastric area, a tympanitic sound is elicited and it is impossible to differentiate the tympanicity of the stomach from the surrounding intestines.

If, however, any lower intercostal space is firmly compressed by an assistant or even by the patient, a dullness corresponding to the stomach is elicited on light percussion.

During the time an intercostal space is firmly compressed, there is a reflex stimulation of the vagus which makes the gastric walls tense, thus putting the air or gas within them under increased tension. For the latter reason, we have the physical elements necessary for the transition of a tympanitic to a dull tone.

During the maneuver, the dullness of the stomach on percussion is differentiated from the resonance of the lung and the tympanicity of the intestines.

Fig. 2, represents a normal stomach outlined by the vago-visceral method of percussion; the continuous line represents the stomach when empty and the broken lines, the position after the ingestion of bismuth; L, represents the lower border of the liver.

If a comparison is made between the X-ray pictures of the stomach and those obtained by the vago-visceral method of percussion, one notes a discrepancy in size and shape of the organ.

Now, the X-ray pictures have been determined by filling the stomach with a bismuth paste.

We note in Fig 2 what ensues respecting the form and position of the stomach before and after the ingestion of bismuth and we are constrained to conclude, that the X-ray pictures are artificial and only partially reproduce the real shape of the organ. The moment food is ingested, and particularly bismuth, the stomach endeavors to evacuate its contents and the exaggerated vertical posture of the organ is manifested. The latter conclusion was only formulated after repeated examinations of at least one hundred cases.

In a small minority of instances, notably in severe grades of gastric atony and gastropnoxis, the percussion of the stomach by the author's vago-visceral method is by no means easy, and recourse must then be had to the conventional methods.

Stomach Reflexes.*

If a pleximeter is placed in succession over the spines of the first three lumbar vertebrae and struck a series of strong percussion-blows with a suitable hammer and percussion of the stomach is rapidly executed (vago-visceral method), a decided diminution in the size of the



Fig. 2.—Percussion of the Stomach by the Vago-Visceral Method. The continuous lines represent the empty stomach and the interrupted lines, the contour of the organ after the ingestion of bismuth.

organ is noted; this is the stomach reflex of contraction and is of a few minutes duration only.

If, after the same maneuvers, the spine of the eleventh dorsal vertebrae is struck, the stomach dilates and we have elicited the stomach reflex of dilation.

*It is manifestly impossible here to enter into a detailed discussion of these reflexes and for a more extended study of the subject the reader is referred to the author's recent book, *Spondylotherapy*, Philopolis Press, 406 Lincoln Building, San Francisco.

If one strikes the fifth dorsal spine, the pylorus dilates and it contracts when one executes concussion of the third dorsal spine. In other words, we elicit the pyloric reflexes of dilatation and contraction.

To the average reader, the foregoing observations seem incredible but they have all been most carefully controlled by X-ray examinations and in other ways.

Diagnostic Data.

The *motor power of the stomach* may be determined by noting the degree of recession of the lower border of the organ (the lower border being first determined by vago-visceral percussion) after concussion of the first three lumbar spines to elicit the stomach reflex of contraction. In the norm, the degree of recession varies from 2 to 4 cm.

Points of tenderness presumably due to a gastric ulcer or a tumor associated with the stomach, will shift their position downward or upward according to whether we elicit the stomach reflex of dilatation or contraction.

The tender point of a duodenal ulcer would be uninfluenced in position by evoking the stomach reflexes.

In several instances the writer has made an early diagnosis of a carcinoma of the stomach by noting the irregularities of the borders of the organ after percussion of the latter.

Gastrectasis caused by pyloric obstruction may be determined by noting the absence of the pyloric reflexes. That is to say, percussion by the vago-visceral method shows neither an augmented area of the pylorus after concussion of the fifth dorsal spine nor a diminished area, after concussion of the third dorsal spine. Perigastric adhesions may be surmised when percussion of the stomach shows no descent of the latter during forced inspiration.

An hour-glass stomach was determined in one patient.

Pharmaco-Diagnostic Data.

After an hypodermatic injection of 8 minims of a solution of adrenalin chlorid, 1:1000, concussion of the first three lumbar spines to elicit the stomach reflex of construction produces the contrary effect, viz., a dilatation of the organ (stomach reflex of dilatation). Thus, before concussion of the spines in question, the stomach retracted 2½ cm., whereas after the injection, it dilated 2 cm. After an injection of pilocarpin (gr. 1-10), the stomach reflexes are accentuated.

Thus,

- Stomach reflex of contraction before injection, 3 cm.
- Stomach reflex of contraction after injection, 5 cm.
- Stomach reflex of dilation before injection, 2 cm.
- Stomach reflex of dilation after injection, 3.8 cm.

Atropin paralyzes the motor endings of the vagus. An injection of 0.001 gm. (gr. 1-60) of the latter drug will manifest its action within thirty minutes and disappears in from one to three hours. During the full physiologic action of the drug, the stomach reflexes are abolished.

It will be evident to the reader, that atropin may thus be utilized in excluding any augmented irritability (hyperkinesis) of the vagus. Thus the motor neuroses of the stomach (supermotility, peristaltic unrest, gastric crises, spasm of the cardia and pylorus, etc.), must yield to an adequate dose of atropin.

A diagnostic test of a gastric ulcer is the use of orthoform. If eight grains of the latter is given in one ounce of hot water, it will arrest the pains of an ulcer.

If, in a case of suspected ulcer, a drachm of common salt in a glass of water is ingested on an empty stomach, an attack of pain is excited when the salt solution comes in contact with a raw surface. The same method is available to determine whether a gastric ulcer has been completely healed. Hydrogen peroxid will likewise cause a burning in the stomach in the presence of an ulcer.

To decide whether gastric pain is the result of hyperesthesia due to hydrochloric acid, all that is necessary is to give about 10 drops of dilute hydrochloric acid while fasting, and if epigaseralgia ensues, which is relieved by sodium bicarbonate, the origin of the pain may be determined.

In the author's work on spondylotherapy, he has empirically established the presence of definite centers in the spinal cord sensorially related to the different viscera. Thus, the third, fourth and fifth dorsal spines correspond to the stomach. If, the latter spinous processes are thoroughly frozen, all subjective and objective sensations of gastric genesis evanesce from minutes to hours. Thus, one may differentiate gastric from other affections.*

In the treatment of affections of the stomach, it is practically axiomatic when one asseverates, that the most important functions of the stomach are the motor functions and that the chemic and digestive functions are secondary. It is evident then that, the chief object to be attained in gastric therapeutics is to restore the motor functions of the organs.

As has already been observed, the stomach reflex of contraction can be elicited by concussion of the three first lumbar spines.

By concussion, one may expeditiously restore the musculature of the stomach and the method in question is not unlike in results to the gymnastic methods in cardiotherapeutics. The details of the method have been discussed elsewhere.†

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*The subject of pharmaco-diagnosis is fully elaborated in the author's recent work, *Diagnostic-Therapeutics*, Rebman, New York.

†Spondylotherapy, p. 324, 1910.

TONIC COLD APPLICATIONS IN ACUTE TOXIC INSANITIES.

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In toxic insanities, and in the acute forms especially, hydrotherapy is one of the most reliable agencies for relief at our command. From judicious applications of this nature the results are oftentimes little short of marvelous. Be the indication thermic stimulation, the reduction of temperature, or the oxidation of toxic extractive and hydration products circulating in the blood; be it vaso-motor stimulation, or a more vigorous and healthy action of glandular organs and hence improved metabolism, hydrotherapy is a means, and a ready means, to the end desired. Perhaps in no condition, other than typhoid fever, can this truth be demonstrated more forcibly than in the so-called acute toxic insanities.

By such we mean insanities due to infective or chemical processes, exogenous or endogenous poisoning. By far the most common endogenous intoxications arise from defective metabolism, natural consequences of prolonged disturbance of elimination, nutrition, blood formation, glandular action, and tissue change. In the predisposed person such disorders of metabolic processes, even more frequently than the introduction into the system of organic and inorganic poison because more common, are acknowledged to be most important determining factors of psychoses.

And here hydrotherapy has fulfilled the high, sometimes seemingly extravagant, claims of its advocates. Lavage, colonic irrigations, various forms of douches, prolonged neutral baths and packs are the most common means employed to promote elimination, and the restoration of normal function. Their value is beyond question. But the most important agent in the work of organic purification, and unfortunately the least used, is the tonic bath,—the cold or cool bath with friction.

Cold Friction Indicated in Toxemias.

From its excellent results in fevers the term cold bath has become associated in meaning with the reduction of fever, but the presence of febrile temperature is not the sole indication for the tonic friction bath. Rather, the indication is toxemia of whatever source, of which the fever, if such exists, may be only one expression. In many cases of auto-intoxication the temperature may be normal or subnormal. In such the application of the tonic bath proves most beneficial.

No single agent is capable of arousing paretic nerve centers with such promptitude and certainty. Vaso-motor stimulation, improved

rythmical activity of the involuntary muscle cells of skin and muscular coats of the blood vessels, and hence improved circulation, relief of stases, a lightening of the work of the heart by the activity of the great "skin heart" as Woods Hutchinson so happily names the peripheral vascular apparatus, are some of the beneficial effects of a properly administered bath.

In addition a more vigorous and healthy action of glandular organs follows. The skin, kidneys, and lungs are excited to healthier action. Respiration becomes slower and deeper. The absorption of O and excretion of CO₂ is increased, while the excretion of urine and urea increases many fold. "The baths increase combustion and oxidation of the extractive products of disintegration and hydration. They produce these effects because they enhance oxidation processes, heighten arterial pressure, enhance cardiac capacity, and by reason thereof diuresis, whereby a kind of inner purification and ready removal of products of destructive metamorphosis ensues." (Baruch.)

Insanities due to infection or chemical processes, or states dependent upon disorders of the alimentary, circulating and excretory systems call for the application of the tonic bath as certainly as does the toxemia of typhoid fever. Usually in insanity the evil has existed for years until glandular, visceral, digestive, as well as nervous functions are affected, one acting and reacting upon the other in a vicious circle. Nothing short of a general organic purification furnishes relief in most of these cases. Drugs in the form of tonics, alteratives, eliminants, sedatives and stimulants have their uses and limitations. Oftentimes the results are disappointing. Alone, or in conjunction with drugs physical therapy often proves more reliable, and when practiced in combination the therapeutic effect of drugs is promoted.

In the New Hampshire State Hospital striking results have been obtained from the tonic bath. Impressed with its beneficial effects in certain cases of acute mania, confusional states with evidence of toxemia, the excitement of dementia precox, drug psychoses and in other toxic insanities, this is the treatment of choice.

The Tonic Bath Supersedes Drugs.

Time and time again the wonderfully quieting and restorative influence of these baths has been observed. Oftentimes the excitement of the maniac yields temporarily to a single application, a phenomenon as surprising as the quieting of delirium following a bath in typhoid. Almost always the patient quiets down and falls asleep. No one can have any conception of the wondrous change affected until he has seen the previously excited patient sleeping quietly for six or seven hours after a bath of three to five minutes' duration.

So commonly has this been observed in selected cases that the baths are generally given in the evening to secure natural rest for the patient and to promote the comfort of others. By this means the administration of drug hypnotics has been greatly reduced, and rest has been produced where large doses of veronal, trional, dormiol, etc., have proved ineffective.

Such rest is more natural, more prolonged, and has none of the undesirable after effects of drug hypnotics. Under this treatment the general condition of the patients improve, elimination is more free, vital resistance increases, digestion and glandular action become better, and the assimilation not only of food but of tonic and alterative drugs is promoted.

The Correct Technique.

To obtain these results a proper technique is essential. From careless prescribing or imperfect technique positive harm may ensue. The most satisfactory results have been obtained with a procedure as follows: The patient is first wrapped in a dry blanket pack for one-half to one hour, or a hot spray bath of three to five minutes' duration is given, so that an artificial surface heat and dilation of peripheral vessels is produced. From the spray or pack the patient is immediately transferred to the tub (a specially constructed, long one) filled with water at a temperature of 75 degrees F. to 90 degrees F., according to the person's condition and reactive capacity. (In the majority of cases 80 degrees F. seems to be the best temperature of application.) A towel wrung out of cold water is quickly wrapped about the head. The patient is then immersed up to the neck, and friction or chafing is begun over the entire body and kept up while he remains in the tub. At least three nurses are assigned to the duty, two for the upper extremities and trunk, and one for the lower.

On being removed from the tub the patient is rapidly dried, placed in bed, and covered warmly with blankets. A glass of hot malted milk is generally given, lights are turned out and usually in less than ten minutes he falls into a quiet sleep. Indeed, it may be said that in toxic conditions when quieting of delirium does not ensue reaction has not been obtained (neither vascular nor nervous) and the fault is generally to be found in imperfect prescription or technique.

Friction is of supreme importance. It aids "reaction" without which positive harm, rather than benefit, results. It must be thorough, constant, but not so rough as to irritate the skin. Often with nurses new to the work an erythematous eruption from too vigorous rubbing occurs.

As the effect desired in these cases is mainly reflex nervous excitation the duration of the bath is not longer than three to five minutes. The temperature of application is usually 80 degrees F., and for patients of feeble reactive powers 90 degrees F. Nerve stimulus and not abstraction of heat is the end to be attained in these tonic measures. In some cases simple ablutions with friction of successive parts may be all that the patient can stand at first. Beginning with gentle measures and carefully grading the temperature of application according to the amount of "shock" the person can safely bear, in a very short time the general condition of the system improves so that more vigorous procedures may be adopted to advantage.

Importance of the Toxic Factor in Insanities.

"The intoxications and infections occupy a most important position among the general causes of cerebral lesion, and the former are even more important than the latter," writes the noted Italian neuropathologist, Lugaro. Many other authorities attach a maximum importance to the toxic factor in insanity. The interest newly created in this aspect of etiology is healthy and stimulating. Healthy, because it is based on scientific truths and guided by the finger-posts of scientific experiments; stimulating, because it is a departure from the midway of custom, and because it affords a glimmer of hope in conditions which have been regarded as "developmental" in origin, and therefore hopeless, by reason of many forceful considerations, not the least of which has been the dead weight of disheartening experience in treatment.

The effects obtained by the tonic bath in certain cases of insanity rivet another link to the chain of testimony regarding the toxic origin of many psychoses. The treatment is not by any means a new one. In one way or another tonic thermic stimulation was used in olden times to combat toxemia. We read in Hinsdale's "Hydrotherapy" that Currie, a Scotchman, used cold baths in insanity in 1796, and he records several cures of maniacal patients by "throwing them into the cold bath." The procedure was cruelly severe, the patient being thrown again and again into the bath, till he could not leave it without assistance. Yet, as if in exultant justification, the record proceeds: "he (the patient) became perfectly calm and rational in the bath and was discharged some time afterward in perfect health of body and mind."

It is a far cry from this barbarous method to the refined technique of modern hydrotherapists, yet Currie understood the importance of vascular and nervous reaction and doubtless aimed to secure it by means which, in our less heroic times, would furnish sufficient ground upon which to commit the practitioner to jail or an insane asylum.

PROTECTION OF PATIENT AND OPERATOR IN RADIOGRAPHY AND RADIOTHERAPY.

BY SINCLAIR TOUSEY, A. M., M. D., NEW YORK CITY.

No other subject in connection with the Roentgen ray is so important. If you can not use this agent with safety to your patient you ought not to be allowed to use it; and unless you take the precautions which are known to make its use safe to yourself you are needlessly throwing away your life or health.

It seems very strange that physicians should have used and patients submitted themselves to the X-ray in the days of 1895 without a preliminary series of experiments on animals with the same intensity and duration of exposure. A month or perhaps even a week would have shown the danger of dermatitis from a single strong exposure and would have saved many of the early patients from "burns" and the X-ray and its operators from disrepute. The first radiographs of an elbow required an exposure of about two hours and thicker or thinner portions of the body took a proportionately longer or shorter time. The natural way would seem to have been never to attempt a radiograph of a portion as thick as the elbow until an apparatus and technic had been devised which was safe and effective in radiographing an equally thick portion of a rabbit or a dog. The danger of dermatitis from a single strong exposure was well known when the author first began to apply the X-ray; and something was even known about the intensity and duration required to produce such an accident. His early applications to men were therefore preceded by a series of experiments upon books, objects of wood or metal, dead rabbits, a sugar-cured ham, and dried human bones and human skulls, infant and adult. I knew the quantity of X-ray which could be safely applied and I did not attempt to make a radiograph of any part of the body until I had mastered a technic which would produce a successful radiograph of a dead object of the same thickness and density with a safe duration and intensity of exposure. Such experiments have been repeated with each new improvement in apparatus and technic during the years that have seen the required exposures change from minutes to seconds.

Care at the Outset.

If you are a beginner, find out from the manufacturer or from some friend who has used the same apparatus what is a perfectly safe exposure and what exposure should produce a good radiograph

of the hip joint. - But don't let your initial attempt at radiography be upon your patients or yourself or friends. Experiment upon a sugar-cured ham until you can make an excellent radiograph with an exposure that would be safe for a patient. I say learn the safety limits from some one with experience, because if you are a beginner you may not feel entirely competent to apply the rules found in the books for measuring the quantity of the X-ray and so for determining the safe duration and intensity of application. The things to learn from your more experienced friend are what strength of current to use and how long the X-ray may be safely applied with the anticathode or platinum disk in the middle of the tube at a specified distance from the nearest bodily surface.

The experienced X-ray operator should use especial precautions when taking up some new and more difficult portion of the anatomy and especially when changing to some different and perhaps more powerful apparatus. Before undertaking more difficult work with the familiar apparatus he should learn a successful and safe technic, perhaps from the published or unpublished work of other operators or by experimental work of his own upon inanimate objects. Of course he has already obtained the apparatus and experience required to measure a safe exposure to the X-ray. Just one little point may remain to be learned: like the necessity for a small diaphragm in radiography of the frontal sinus or the proper position of the film in dental radiography. If he begins to use the intensifying screen, which has recently been so greatly improved, let him not make his first experiments upon actual patients. He will learn from published reports that the time of exposure should be about one-tenth as long as usual and that the degree of vacuum should be rather low. But even this information should not suffice without experiments upon dead objects. We know that an intensifying screen greatly reduces the time of exposure with the same intensity of radiation and so an experiment upon an actual patient would not subject him to nearly as much radiation as an experiment without an intensifying screen. Still it is an unnecessary, and therefore, an undesirable exposure. Again, the experienced radiologist may change to some powerful apparatus such as the transformer with a high tension rectifier, and may have learned that with about half the maximum power of the apparatus, using perhaps a current of 25 amperes, a picture of the hip may be obtained in about a second and a much more satisfactory one in five or ten seconds. Success depends upon having all the adjustments right, especially the

degree of vacuum in the tube, and of course upon the right kind of an X-ray tube to stand such a heavy discharge, and the best kind of an X-ray plate. This is not a case in which the amount of radiation is reduced as in the case of the intensifying screen. The wonderfully short exposures are of tremendous intensity and should not be made unnecessarily any more than the ones measured in minutes with the weaker apparatus of a few years ago. The careful man will acquire a successful technic before he exposes a single patient.

The author has not learned of any accidents from the use of this apparatus but its powerful effect upon the tissues is shown in the published cases of Albers Schoenberg, Lehmann, and others who have applied it in radiotherapy. At a distance of 13 cm. from the anticathode and with a reduced strength of current forty-two seconds suffice to produce erythema, loss of hair and cure in a case of sycosis barbae. Experiments upon patients are not to be thought of with such tremendous power.

Measuring Contrivances.

The different means of measuring the intensity of the radiation form most valuable safeguards. Some of them are meters for measuring the strength of the primary current and of the current traversing the X-ray tube, the spintrometer for determining the resistance of the tube, a penetrometer for measuring the quality of the ray and one of the different forms of radiometer for measuring the total quantity of X-ray applied. Not all of these are used during each examination or treatment. Some of these are used to determine once for all the proper adjustment of the apparatus and the length of exposure.

The operator and every part of the patient not requiring exposure should be protected from the X-ray during an examination. The ideal method of protecting the operator is for him to be outside the room in which the X-ray tube is in operation. All his switches and meters may be outside the X-ray room and he may observe the appearance of the tube through a small lead-glass window opaque to the X-ray. The vacuum of the tube may be regulated from a distance by pulling upon a string which closes or opens the spark-gap of the regulator. The current may be turned off while the operator enters the X-ray room and places the plate and the patient in position; and then turned on again when the operator has left the room. At the Elm City Private Hospital, New Haven, a still further precaution consists in the fact that an automatic switch remains open until the door is closed. Such a protection for the operator, however, is insufficient without some means of shielding the patient. Usually the part to be radiographed is nearest the X-ray tube and an exposure which is safe for that part is not likely to produce dermatitis of any other part. But we know

PHYSIOLOGIC THERAPEUTICS.

that general exposure to the strong radiation required for a picture has an effect upon the blood-forming organs which may be undesirable or dangerous. Some kind of opaque diaphragm is therefore indispensable.

The author's own method combines safety to both operator and patient by enclosing the X-ray tube in an opaque box open only toward the part of the patient to be exposed. The size of the opening may be varied and the degree of vacuum may be regulated from a distance by pulling a cord without opening the opaque box. The whole device is



RIPPERGER SHIELD AS USED IN RADIOTHERAPY.

called Ripperger's Shield, with some modifications by the author. The box weighs sixty pounds and is suspended from a sort of gallows on wheels by means of which it may be placed at any height and turned up or down or to any other direction. As a further protection to the patient the orifice in the shield is covered with heavy

sole leather to absorb soft rays which would be absorbed by the skin and might do harm and which would take little or no part in the production of a picture. As a further protection to the operator he should wear a lead-lined cap, lead-glass spectacles and gloves and apron of X-ray-proof rubber fabric.

Don't be tempted to hold the film in the patient's mouth in dental radiography. It may seem that there will be so few cases of the kind that the risk may be disregarded. But if you make successful examinations of this kind you will have many calls for your services and before you realize it you may find your hands indelibly marked and perhaps dangerously affected. The few seconds that each patient is exposed has no harmful effect upon him, but if you receive a great many exposures of the same strength you are sure to be injured.

Before leaving the subject of radiography something must be said about the plates and films. Make your first experiments with new kinds of plates and films upon some inanimate object. If on account of a summer vacation or for any other reason you have old plates or films on hand, make an experimental radiograph upon one of them before using them on a patient. The use of a defective plate means loss of time and money to the patient and the operator; but worse than that it means a repeated exposure, which might have been avoided.

Avoid the Fluoroscope.

"Advice to a young man about to get married: Don't." This applies most forcibly to the use of the fluoroscope. The evils thereof so far exceed its benefits that mankind would be greatly benefited by its complete abandonment. Infinite care is required to avail ourselves of its manifold uses without danger to ourselves and our patients and the use of the fluoroscope should be a rare exception, not as a complete examination but as a momentary glance in testing the quality and intensity of the radiance from a new tube or with a new exciting apparatus; or in determining the best position of the part to be radiographed in some difficult case. The danger lies in the longer exposure for making a diagnosis. The developed plate may be studied and discussed as long as necessary but a long examination of the fluoroscopic image means injury to the patient and if frequently performed involves the greatest danger to the operator. The use of the fluoroscope for examinations and for measuring the quality and intensity of the X-ray by the appearance of the bones in the operator's hand has been the death of several famous specialists. The manufacturers who have lost their health or their lives have been those who made a practice of allowing prospective purchasers to look through their chests and other parts of their bodies in demonstrating the apparatus. One

manufacturer whom I spoke with a few months before his death from cancer, caused in this way, told me that it was impossible to sell the apparatus without subjecting himself to this certain death by torture. He was not merely running a risk, for that implies some chance of escape, and in his case destruction was a certainty. The theory was that if he told every physician who asked for such a demonstration that it was a dangerous thing, a certain number of possible purchasers might be scared off and send their X-ray work to some specialist. The manufacturers are making a great mistake. Some kind of a manikin could easily be used for fluoroscopic demonstrations and the physician would be the last person in the world to ask such a sacrifice of a fellow man if it were explained to him that while one transillumination would be safe a number of them every day would be fatal. It is like the bartender who is invited to take a drink. He can't drink with one customer without drinking with everybody and so he has to politely refuse everyone if he wants to keep sober.

The cumulative effect of the X-ray is to be constantly borne in mind. One must not use his own hand as a test object or let his friends look at it with the fluoroscope as a curiosity.

An insidious injury is the sterility which is certain to overtake the man who works in the same room with an unshielded X-ray tube even if he stands in such a position as to be but slightly exposed. He is not safe even though the frequent exposures are too slight to produce any outward sign of trouble.

More Care Needed in Treatment.

Roentgentherapy requires much more knowledge and experience and technical apparatus for the measurement of dosage than radiography. In the latter we simply have to shield everything except the part to be depicted and then apply a radiance which we know will not produce any perceptible effect upon the tissues; and it makes little difference whether this exposure varies between one-half and twice a certain exposure and for different parts of the body much wider variations in the exposure are necessary. In radiotherapy, on the contrary, a certain quantity of radiation is right and will produce the desired effect, while one-half as much may utterly fail and twice as much may produce incurable ulceration. Everything that we can learn about exact means of measuring dosage is of the utmost importance and these means are to be cautiously applied until verified by one's own experience. An operator who has been treating cases by moderate, frequently repeated applications until the development of a reaction

should hesitate to give a full erythema dose at a single sitting, no matter what radiometers he has to measure it with. Again, an operator changing from dosage measured in minutes with the induction coil and a moderate strength of current should make many experiments with a radiometer before applying the dosage in seconds, which has already been alluded to as a recent application of the transformer with high tension rectifier. A few seconds flashing across the regulator during an exposure lasting twelve seconds will make a great difference in the result.

Special means of protection are called for in some cases; like the shield for the eye-ball in treating growths on the eye-lid; and desensitizing the skin by pressure exsanguination in treating deep-seated tumors.

It is never sufficient to describe dosage merely as such a duration of exposure at such a distance. Even if the strength of the primary current and the current traversing the X-ray tube are stated, an indispensable factor still remains. This is the actual amount of X-ray applied. A good unit of dosage is the erythema dose, the quantity of X-ray which, if applied at a single exposure or in divided doses within a week or so, will produce erythema of the skin. The quantity of X-ray is measured by means of the change of color produced in Sabouraud & Noiré's barium platino cyanide tablets, or by the photographic effect upon sensitized paper in Kienböck's radiometer. There are several other apparatus for the same purpose.

140 West Fifty-seventh street.

A PLEA FOR THE USE OF ELECTRICITY IN PROSTATIC DISEASE.*

BY ARTHUR W. YALE, M. D., PHILADELPHIA, PA.

The poets are wont to picture old age as the sunset time of life, or, employing another metaphor, portray the wearied mariner as nearing his haven after the storms and perils of life. But as the little "rift within the lute" can spoil the music, so can one detail, which the poets quite justifiably forbear to mention, mar the peace and serenity of old age. For does not the catheter cast its ominous shadow over the sunset path, and is not the aged mariner too often compelled to choose between the Scylla of the surgeon and the Charybdis of an enlarged prostate?

Our modern surgeons are waving red flags before our terrified patriarchs. "Your prostate or your life," they demand and not infre-

*Read before the Pennsylvania Society of Physico-Therapy.

quently both are surrendered. Prostatectomy is offered as the sole alternative from the discomfort and pain, not to say the peril of the catheter life. Yet the choice is a difficult one, for the operation has a startlingly high mortality, and to cease the use of the catheter means, in quite a number of the cases, to cease from life itself. Has the man advanced in years, absolutely no choice between the peril of the knife and the peril of the catheter?

Physico-therapy, which has worked wonders in other fields, and achieved the apparently impossible, has in these advanced days apparently solved the problem of the enlarged prostate, and effected permanent cures in cases which until very recently would have been classed as incurable. Still the average surgeon hails from Missouri, and demands to be "shown" and this is the purpose of the writer in this paper.

The Position of the Prostate.

First, a few words regarding the anatomy of the organ under discussion may not be amiss. The prostate is a glandular body about the size of a horse-chestnut, which surrounds the neck of the bladder and the commencement of the urethra. It lies behind and below the symphysis pubis, posterior to the deep perineal fascia and upon the rectum. The organ is composed of two lobes, separated by a transverse furrow, and these lobes in turn comprise a large number of individual glands which open separately or in combination into the prostatic portion of the urethra, by about thirty narrow orifices. Its blood supply is derived from the external pudic, hemorrhoidal and vesical arteries, and it is surrounded by a plexus of veins and arteries which communicate freely with the blood supply of the genitals and rectum.

According to an eminent specialist, the ducts mentioned, with their open mouths, "Become infected in ninety per cent of the cases of specific urethritis, and the condition is then practically incurable either by local treatment or internal medication."

Now to consider the treatment of an average case of enlarged prostate or prostatitis by physico-therapy—a case which the surgeons have pronounced incurable, save by operation. In the first place, the location of the prostate, while perhaps not specially arranged with a view to treatment by physico-therapy, nevertheless could not have been better planned for the purpose. The metallic electrode of Dr. Snow or the vacuum glass electrode of Dr. Titus will, when introduced into the rectum, lie directly behind the prostate, and part of each lobe will rest in the hollow specially provided in these applicators. Thus the affected organ may be directly reached by the chosen modality.

With such an advantageous base of operation, the choice of modality is the next step, for physico-therapy has its basic principles, as has surgery, and the application is no haphazard work, but follows the logical sequence of cause and effect.

The organ usually presents a state of induration with inflammation, hypertrophy, and in some cases infection. To effect a cure, the induration must be eliminated, the inflammation removed, the hypertrophy reduced, circulation and local metabolism stimulated, and the elements of infection destroyed.

Care in the Selection of the Modality.

The selection of a modality is important, for it is clear that some might eliminate the induration, but leave the organ in an irritated condition, or else in such a state of relaxation, that a relapse would readily ensue. It is obvious that a modality must be chosen which will act in a diffused manner, that its effect be tonic, that regeneration be established, and, in short, that the prostate return to its normal condition. This is a far more logical solution of the problem than the ruthless extirpation of the organ.

Careful clinical observation has demonstrated that we have one modality which seems to fulfill all these and this consists in the currents generated by the static machine. Applied directly to the diseased prostate, they are capable of a great degree of diffusion. They may be regulated with much accuracy, being varied according to the condition and the toleration of the patient. These currents induce contraction of the tissues, or what has been termed "tissue gymnastics," and stasis is removed.

In acute cases, the accumulated exudate disappears, and with it the swelling, by means of the softened tissues. Pain disappears very early in the treatment, and will not recur if the treatments are given with sufficient regularity. The circulation of the organ is restored, and the normal metabolism induced, while in cases of long standing, even deposits of fibrin are gradually removed by the wave current. Lastly, and by no means of least importance, the tonic effect is felt throughout the entire system, and assimilation promoted. Is it necessary to contrast this with the shock of a prostatectomy upon an enfeebled system?

But again the skeptic demands proof. It is easy to assert, but the true burden of proof rests upon clinical cases. These the writer takes pleasure in citing in support of his statements.

These patients were almost entirely of the "incurable" class, to whom a prostatectomy was held out as the only hope. The physicians who treated them are men of international reputation, whose diag-

nosis, prognosis, and statements as to permanency of cures cannot for one moment be questioned.

Dr. W. B. Snow of New York, reports the treatment of fifty cases of prostatitis, of whom forty were permanently cured, while to the remaining ten marked relief was afforded. One case, who was completely cured, is especially noteworthy. The patient, a man of sixty-three, suffered from a greatly enlarged and sensitive prostate. Dysuria was present, with the usual frequent urination, and his physical condition had reduced him to a state of melancholia. Static treatments, such as have been described, were given, and the relief following the first treatment was remarkable. The application was made on four subsequent days, after which he was treated every other day for four weeks. At the end of this time he was discharged as cured, and since then, though six years have passed, there has been no relapse. He has not been compelled to rise at night, the gland is almost the normal size, and causes no discomfort.

Dr. F. De Kraft, of New York, cites nine cases, eight of which were completely cured. In one instance, the secretion indicated the presence of gonorrhea, and the patient was suffering from gonorrheal rheumatism.

Dr. T. H. Cannon, of Baltimore, reports ninety-seven cases that were treated by him, of which number sixty-three were the result of a previous gonorrheal infection, and occurred in men from thirty-five to fifty years of age. The gonorrheal origin was proved, as in all the above cases, by microscopic examination, the shreds examined containing gonococci.

In the remaining thirty-four, twenty were, no doubt, of gonorrheal origin, but although shreds were found in the urine, all history of an infection was denied: In these cases he had only to deal with a marked hypertrophy of the prostate, along with the usual symptoms of prostatic enlargement and urinary incontinence. In the remaining cases, a fibroid condition was present. In all the eighty-three specific cases there was marked improvement from the offstart, when the static wave current was employed to produce slow, deep and painless contractions. In every one of these cases it was noted, without exception, that the irritability of the bladder was lessened after the first few treatments, and the frequent desire to void urine was diminished. After several weeks' treatment, thrice weekly, it was observed that there was a marked reduction in the size, and sensibility of the gland, as evidenced by the palpating finger. All these cases went on to complete recovery, without any recurrence.

In the fibrous cases, it was found necessary to use an X-ray electrode in the rectum, first, in order to inhibit any germ life that was sure

to be present, and second to cause a contraction and absorption of fibrous tissue. When resolution was established, the wave current as before described, was employed, and with the exception of three cases, all made a good recovery.

The Proper Technique.

The writer has successfully followed the lines of treatment laid down by the eminent leaders, who have been quoted. In acute cases, the metallic applicator of Dr. Snow, after proper lubrication in a solution of picrate of silver and glycerine, is introduced into the rectum and held in place by the very convenient holder devised by Van Houten and TenBroeck. In chronic cases, the Titus insulated glass vacuum electrode, manufactured by Machlett, is substituted for the metallic applicator, as a larger amount of ozone is generated at the point of contact, and as the vacuum acts as an added resistance. The patient is placed upon the insulated platform in Sims' position. The wicker treatment chair of Van Houten and TenBroeck is especially convenient and comfortable, and also adds to the insulation of the patient.

The applicator is now connected to the positive side of the static machine, the negative side being grounded. In cases of infectious inflammation, the glass vacuum tube is connected with the negative side, as this produces a greater intensity of actinic rays, and hence a higher degree of antiseptic action. The machine, which should be one of the influencetype (on account of the higher voltage thereby generated), is now started at moderate speed and the pole pieces separated, until a current of not over one hundred interruptions per minute is induced. This is continued from ten to twenty-five minutes. The treatment is repeated twice or thrice weekly, according to the requirements of the case.

Improvement will be noted after the first week's treatment, except in cases of fibrous enlargement, when it may be necessary to use the X-ray in addition.

The past twenty-five years have witnessed the ascendancy of the surgeon, and the general practitioner has learned to send to him cases which were not amenable to medication, that he, by his special skill in the use of the knife, the saw, the chisel and the trephine, may extirpate the pathological process. But physico-therapy marks a new era in the progress of medicine, and its mission is not one of extirpation, but rather of regeneration. The diseased prostate is restored, not removed, and the patient spared a dangerous operation.

The duty of the physician is to save, not to destroy. Radical surgery has given place to conservative surgery, and this in turn should yield to the regenerative forces of physico-therapy. In the present

advanced state, it would appear as unjustifiable to remove a hypertrophied prostate, as to amputate an arm, because of a felon.

1524 Chestnut street.

A PURIN FREE DIET IN CERTAIN FUNCTIONAL NERVOUS AFFECTIONS.

BY ROBERT ELLSWORTH PECK, M. D., NEW HAVEN, CONN.

Late Chief of the Neurological Clinic, Yale Medical School, etc.

The value of a modified diet, from which red meat and a few fruits and vegetables are excluded, in the treatment of certain joint and rheumatic affections, has been recognized by the medical profession for a great many years, but the investigations of the past ten years into the chemistry of foods and particularly of the purin bodies and the origin of purin nitrogen, have led to a radical change in our views of the subject. Now we know that some varieties of white meats and fish contain as much purin nitrogen as the red meats, e. g.:

Sirloin steak contains.....	.1305% of purin bodies.
Mutton contains0965% of purin bodies.
Pork loin contains.....	.1212% of purin bodies.
Chicken contains1295% of purin bodies.
Halibut contains1020% of purin bodies.

A glance at the above table will convince one of the necessity of cutting out all flesh food as well as red meats when the occasion requires.

The Explanation of "the Purin-Free Diet."

What do we mean by a purin free diet? The term purin was given by E. Fischer to the nucleus C_5N_4 and all substances containing this nucleus are termed purin bodies. Those of ordinary occurrence are Hypoxanthin, Xanthin, Uric Acid, Guanin, Adenin, Caffein and Theobromin. These substances exist in flesh foods and are principally waste products on the way to excretion in the body of the animal furnishing the food. They consequently have no food value but must undergo chemical change and be, in turn, excreted as uric acid and urea. Small quantities of purin bodies are found in certain vegetables, particularly in those of the leguminous variety. So that a purin free diet would exclude all meats, fish, fowl, meat soups, meat broths, beef tea, bouillon, kidney, liver, pancreas, bacon, peas, beans, asparagus tips, mushrooms, oatmeal, entire wheat flour, or anything made from the entire grain, tea, coffee, cocoa, chocolate, and the malted liquors, ale, beer, porter, and stout.

In a recent paper by Dr. Thompson and myself we called attention to the prevalence of disturbances of purin metabolism in func-

tional nervous affections, particularly in neurasthenia or in patients with symptoms which are commonly diagnosed as neurasthenia. In a large majority of cases of functional nerve disorders, there exists metabolic disturbances which either form the basis of the disease or are the results of the general nerve weakness and debility which interferes with the proper performance of the bodily functions, and which must be altered before the train of nervous symptoms can be relieved. The exact nature of the chemical processes by which the body-metabolism is carried on has not been determined, but the evidence points towards a separate and distinct enzyme which has as its special duty the changing of the nucleo-proteids into purin bodies and the splitting up of the purin bodies into their end products. For example, nuclease acts upon the nucleo-proteids, converting them into hypoxanthin, xanthin, adenin, and guanin; oxidase converting hypoxanthin into xanthin and xanthin into uric acid and urea; adenase converting adenin into hypoxanthin and guanin and guanase converting guanin into xanthin and uric acid and urea. However, this may be, we do know that all the body functions are under the direct control of the nervous system, and when the patient suffers from nervous debility, the daily work, whether it be the performance of voluntary acts, both physical and mental, or the involuntary metabolic processes, are not carried on in a perfect manner, and the patient suffers from the attendant train of symptoms.

When this condition exists, and the chemical changes are being improperly performed, any added work, such as is required of the system in caring for the purin bodies taken in with the food, will only add more work to the tired nerves, without adding anything of food value. Therefore, a diet free from these purin bodies, which, as we have seen, are waste products of the animal from which the flesh came, would seem to be an ideal diet for the patient suffering from functional nervous disturbances; and by adopting an anti-purin diet the patient is relieved of this added work.

The Value of This Form of Dietary.

As we have already said, the extractives of meats (purin bodies) have no food value, they are stimulants, however, and with patients suffering from functional nerve disorders, where there is hyperexcitability, the stimulant action of a purin diet adds to this condition.

Many and varied opinions exist regarding the advantages of a meatless diet, but the experience of nearly all patients for whom I have recommended a purin-free diet is that they gain in weight and strength and are able to do more, and better, work with much less fatigue. Wherever this is not the case, I find they do not eat liberally of all the foods permitted, but confine themselves to two or three

articles of diet. In prescribing a purin-free diet one must always remember what a radical change it is for the majority of Americans to leave meat out of their dietary. The change can be made, however, without difficulty if the patient eats liberally of vegetables, cereals, fruits, nuts, etc. There are a few people who never eat vegetables or cereals, and this fact as to one's personal idiosyncrasies should always be inquired into, for in that case some modification of the strictly purin-free diet must be made. In the beginning it is better to let him return to his ordinary diet once in three or four days, or once a week, until he becomes accustomed to the change.

Nuts are a very good substitute for meat, containing from five per cent to ten per cent more protein than meats, and no purin bodies. They are very easily digested if thoroughly masticated, and if eaten as a substitute for meat will, with very few exceptions, cause no digestive disturbances. In fact, the reason why nuts are believed to be indigestible, or are indigestible for some people, is because they do not chew them thoroughly, and eat them after eating meat, thus loading the system up with too great a proportion of nitrogenous food material.

Prof. R. H. Chittenden's² feeding experiments have proven pretty conclusively that most of us eat too much, eat more than we need to carry on the daily work of the system and keep it well nourished. Whatever excess of food is taken into the system, entails a useless expenditure of nervous energy to carry on the work of chemical change and digestion of this excess in order to get it out of the system. This same argument is true of the ingestion of purin bodies. They have no food value, but are waste products and stimulants, increasing the appetite and desire for food, so that on a meat diet one is inclined to eat more than on a purin-free diet. In all cases of nerve debility, fatigue neuroses, neurasthenia, hysteria, psychastheria, occupation neuroses, insomnia, the acute insanities, etc., the object of treatment is to conserve what nerve power still remains to the patient and bring it back to the normal mark, and this end is best attained by a liberal anti-purin diet.

I append a purin-free diet list which I have prepared with considerable pains, and which I find furnishes a valuable guide to patients on beginning the anti-purin dietary:

1. Journal of the American Medical Association, Feb. 29, 1908.

Diet List. Can Take.

<i>Cereals.</i>	<i>Vegetables</i>	<i>Fruits.</i>	<i>Nuts.</i>	<i>Miscellaneous.</i>
Cream of wheat	Cauliflower	Oranges	Hazelnuts	Milk
Puffed rice	Cabbage	Grape fruit	Chestnuts	Eggs
Wheat flour	Lettuce	Bananas	Almonds	Cheese
Wheat bread	Spinach	Peaches	Walnuts	Butter
Indian corn	Potatoes	Prunes	Pecans	Olives
Macaroni	Sweet potatoes	Pears	Butter nuts	Olive oil
Rice	Sweet corn.	Dates		Gelatine
Tapioca	Egg plant	Figs		
Hominy	Parsnips	Apples		
	Turnips			
	Carrots			
	Beets			
	Celery			
	Onions			

The following are a few suggestions for dishes:

Soups—Cream of corn, cream of vegetables, cream of spinach, tomato bisque, potato, celery.

Meat Substitutes—Mock turkey, green corn oysters, cheese suffle, macaroni and cheese, eggs in all ways.

Potato Dishes—Baked, boiled, stuffed, lyonnaise, French fried, au gratin, Delmonico, creamed, hash brown, puffs.

Salads—Lettuce, celery, tomato, potato, cabbage, cucumber, and combinations, apple, celery and nuts, chestnuts, Mikado.

Croquettes—Potato, rice, sweet potato.

Fritters—Corn, apple, banana, cauliflower.

Scallops—Potato, tomato, celery, onions, squash.

Sandwiches—English walnut, ginger, green pepper, olives and cheese, peanut.

Miscellaneous Dishes—Corn patties, corn cakes, corn pudding, cheese balls, cheese straws, Welsh rarebit, vegetable salad with jelly.

Desserts—Apple dumpling, date dumpling, peach dumpling, prune whip, date whip, rice float, brown Betty, salted nuts.

Cannot Take.

Meats, fish, fowl, meat soups, meat broths, beef tea, bouillon, kidney, liver, bacon, sweet breads, peas, beans, asparagus, mushrooms, oatmeal, shredded wheat biscuit, friscuit, entire wheat bread, tea, coffee, cocoa, chocolate, ale, beer, porter, stout.

56 Howe street.

A COMPARISON OF THE HYDROTHERAPEUTIC METHODS AT AIX-LES-BAINS AND VIRGINIA HOT SPRINGS.

BY GUY HINSDALE, A. M., M. D., HOT SPRINGS, VA.

Secretary of the American Climatological Association; Fellow of the Royal Society of Medicine, Great Britain, etc.

These two representative resorts in France and Virginia have some degree of similarity in the nature of the waters, in the methods employed and in situation, so that I have thought that a comparison

might be interesting. These resorts are both situated amid beautiful natural surroundings; the mountains at Aix are somewhat higher than at Hot Springs. Mont-Revard, one of the Alps of Savoy, rises to a height of 5,360 feet and is accessible by a rack and pinion railway so that persons who wish to escape the heat of summer may readily go from Aix, whose elevation is only 870 feet, to the cooler air of over 5,000 feet of altitude. The elevation of Hot Springs is 2,360 feet. The mean annual temperature of Aix is a little higher than that of Hot Springs, Virginia, which was 50.3° F. in 1908, with a maximum of 86° F. and a minimum of—3° F. The season at Aix is from April 1st to November 1st; there are very few patients there during the winter. At Hot Springs visitors come all the year round, but mid-winter is the least popular season. There are over fifty hotels and pensions at Aix and only one hotel and two boarding houses at Hot Springs.

The Characteristics of the Springs.

The springs at Aix are calcic and slightly sulphurous. They contain an organic substance, *Baregine* or *glairine*, which gives the water a soft quality. The principal springs used are the "alum" and sulphur springs, but no alum is present and sulphur only in the slightest degree. The flow at Aix is about one million gallons daily at 113° F. (45° C.). At Virginia Hot Springs the waters are all of calcic carbonate and sulphate with some magnesia sulphate. One has a minute trace of sulphur but others, used for bathing, contain a small amount of carbonic acid gas and nitrogen. They have a maximum temperature of 106° F. (41° C.), and the "Boiler Spring," which is exclusively used for bathing, has a flow of 130,000 gallons daily.

The waters of Aix and the bathing establishment belong to the French government, which controls their use; those of the Hot Springs belong to the Virginia Hot Springs Company, which operates its hotel as a health and pleasure resort and owns thousands of acres of mountain and valley land in the vicinity. In the latter case a private corporation provides the usual public utilities of a small community. A liberal portion of its receipts which approximate one million dollars a year, are expended on the buildings, roads, golf links and equipment of the bath-house. This included during the past year an investment of \$25,000 in the installation of a complete set of Zander apparatus. This equipment is similar to those found at Aix, Carlsbad, Wiesbaden and other well known European resorts.

At Aix, as well as in other foreign spas, provision is made for treating the poor. The excellent institution known as "L'Asile Evangelique" at Aix, we regret to say, has no counterpart at Virginia

Hot Springs. The classes of affections treated at Aix and at Hot Springs, Virginia, correspond very closely. During the past year at Hot Springs about thirty thousand baths were given. In the large number of persons who come for treatment the rheumatic and gouty are most numerous; next to these are patients suffering from nervous diseases. Many come for the reduction of flesh and by the use of systematic bathing, massage, diet and exercise the weight can be safely reduced in almost every case. The treatment of insomnia, neurasthenia, hypochondria and malnutrition is successfully carried out. Many who habitually over-stimulate or whose social or business life keeps them under heavy strain find in an annual or semi-annual visit to the Virginia Hot Springs the necessary means for recuperation.

Careful Medical Supervision.

At both Aix and Hot Springs the baths have very positive effects and some care is exercised that persons shall not bathe without proper medical advice. To get the best results and avoid disappointment a physician is consulted so that treatment may be carried on as the individual case requires. This is accomplished by definite prescriptions for the different forms of baths at Hot Springs. The Swedish bathers and masseurs are guided entirely by the directions of the physician and are not permitted to institute changes without his order.

Among the newer forms of hydrotherapy are the hot-air and electric cabinet followed by the circular, jet, Scotch and fan douches. Two control tables furnish this valuable form of bath. Its effects are notably tonic and provision is made for adjusting the temperatures and pressures with the greatest facility while the patient is being treated. Thus every case is bathed as the directions specify. Patients usually remain under treatment three or four weeks; no arbitrary number of baths is regarded as a "course" or "kur."

The season of the year need not deter one from coming to Virginia Hot Springs. The baths are connected with the hotel by means of elevators and a passageway so as to avoid exposure during inclement weather. Wheel chairs are provided for those who desire them. At Aix patients are carried by two porters in a chair enclosed with curtains, from their hotels to the bath house and back again, the fees for which vary according to the distance covered.

Americans throng to Aix-les-Bains in summer and Mr. Pierpont Morgan has been a regular visitor for fifteen years. He has lately given \$40,000 for an isolation pavilion in connection with the Municipal Hospital, to which he had already contributed over \$50,000. The new pavilion has been designed by a New York architect.

The most popular seasons at Hot Springs are the autumn and

spring, but at other times it is also attractive and the best accommodations are provided throughout the year. Owing to the elevation, the air is a stimulant; the soil drains rapidly; the good roads, the superb golf links and other attractions serve to retain the visitor's interest and provide him with whatever out-of-door recreation he may possibly require.

Neither at Aix nor at Hot Springs is there any early promenade, with music, as at the well-known German and Austrian spas.

The Various Adjuvant Measures.

At Aix the treatment is chiefly external; the use of waters internally is wholly secondary. There are baths, sweating rooms and special douches, including the famous douche-massage that has been practiced at Aix for over a century. The water pressure varies according to the floor. In the lowest floor of the bath house the pressure is from a height of fourteen meters or twenty pounds; on the next floor, from nine meters and thirteen pounds, and on the upper floor, from six meters and nine pounds. There are fifty tubs, six pools and thirty apartments where the douche-massage is administered by two operators; there are seventeen apartments for douches by a single operator, besides rooms for local massage, local vapor baths called "Berthollets," steam rooms and rooms for inhalation and pulverization of the water. This latter method of inhalation has not yet, as far as we know, found its way to America.

The masseurs, called doucheurs, are French, are very skillful and follow this calling for generations; they use a "petrissage" or kneading and rubbing of the trunk and limbs while directing the stream of water to the affected part. Much the same effect is produced at Hot Springs by the "spout bath." While at Aix we heard nothing of the use of the hot blanket pack used after the bath at Hot Springs. Instead, the patient is quickly dressed after his douche-massage and the application of the jet and hurried by his porters to his hotel, where he quickly gets into bed for an hour's rest before luncheon. Occasionally the douche-massage is preceded or followed by a vapor bath in an adjoining "bouillon."

The essential features of treatment at both these resorts are very similar. They have a great effect on the skin and soft tissues by the sweating and douche-massage or jets of hot water associated with manipulations of joints. Adhesions, exudates and infiltrations yield to these measures as well in one place as the other, and in both cases the elimination of morbid products is favored by the internal use of the local diuretic waters.

THE GREAT AMERICAN DISSIPATION: ITS CAUSE AND TREATMENT.

BY H. H. ROBERTS, A. M., M. D., LEXINGTON, KY.

Longevity, accompanied by good health, is the desire of everyone; and it is only by adopting a rational hygiene, and improving the manner of living, especially in regard to discretion in partaking of food, that we may be entitled to longevity.

Are we improving in the manner of right living? Does modern man exercise any better judgment in the kind, quality and quantity and mode of preparation of his food than did primitive man?

Primitive man in his omnivorous eagerness to satisfy the pangs of hunger, perhaps exercised some care in the preparation of his food and, doubtless, used discretion in the selection of that food. He had the opportunity to learn by experience and observation, to discard those things which he found injurious and distasteful, and to partake only of those which renewed his strength. He, by such experience, added to his menu from day to day those products of food which were among the most choice and wholesome.

Thus, primitive man became the founder of the fundamental branch of Physiologic Therapeutics, namely Dietetics.

The Abnormal Eater.

The twentieth century man remembers "the night before" when he awakens with the dark-brown taste, the clouded brain, the throbbing head, all of which are but gentle reminders of the glorious (?) time he had the evening before. But does he profit by such experience? The club dinner, the wine banquet, the stately dining are indulged in repeatedly, time and time again, regardless of the vertigo, the headache or the timely warning of his physician.

All this is applicable to the average citizen, the business man, the lawyer and most of the other professional men. After a strenuous day's work at the office, bench, bank, or on the farm, tired and worn out both physically and mentally, a meal is consumed without giving any thought as to the bodily requirements, and with no care at all as to how such food was prepared.

As long as the food is attractive, highly seasoned and properly flavored to meet the fancy and to tickle the palate, it is gulped down half masticated and washed into the stomach with water, wine or other drinks. Eating has become more of a routine piece of work which must be disposed of in the shortest time possible.

Then again, there is another class who seem to have but one desire in this life and that is to live to eat. Both accomplish the same result as far as their health is concerned. A weakened digestion is stimulated with wine and a tardy appetite is whipped by pepper,

pepper-sauce, tabasco, mustard, spices and various other so-called appetizers.

The twentieth century man is surrounded with every advantage. He has culture, refinement, and the counsel of the scientific men of the century. Does he listen and give heed to the warning? No; he goes heedlessly on into the doom of the followers of The Great American Dissipation—the excessive indulgence, engorgement, improper mastication, lack of care of food products and the frequent and excessive eating as practiced by the average American citizen.

I believe that this special form of dissipation is by far the greatest peril to the American citizen. It is not only this custom, or habit of over-eating that is so bad; but the half-cooked, greasy and highly-seasoned manner with which so many of our foods are prepared. The American cuisine is a joke and an insult to civilization. Even the savage prepared his food before eating, by submitting it to fire.

The Importance of Cooking.

Thorough cooking of foods is not given the thought which such an important matter deserves. We need reform in this matter, an official inspector of the kitchen, of the hotel and the restaurants, as well as the private homes. How many know the state of health of their cooks, their private character, their mode of living?

There is little satisfaction and poor comfort in lecturing to an indiscreet public upon its folly. It is not complimentary to the intelligence of the average man to say to him that he does not know how to *Eat*, but it is a fact nevertheless, and the physician gets but little credit for his efforts to educate the public.

The wisdom, which is acquired by bitter experience from repeated wrong doing, should develop a knowledge of right living. Sympathy should always be manifested for human error and pity should be extended to those who do not know an error when committed.

If the physician lectures to the suffering public and warns them of the great danger of their folly, they either misconstrue his intentions or get the impression that he is drumming up practice or desirous of advertising himself.

A knowledge of the proper use of the food necessary for the development and maintenance of the body should be compulsory education. A right step has been taken in a number of our leading public schools by the introduction of the study of Domestic Science.

The result of this excessive eating and its attendant evils are many. The large intestine, being the seat of the accumulation of undigested food, furnishes a suitable material for toxic development. The accumulation of waste matter becomes a repository for the microbes of fermentation and putrefaction.

Constipation is usually present in such conditions. We should carefully examine the stools for the intestinal flora and that this may be done with accuracy, a thorough enema should be given.

We know that in these cases of auto-toxemia it is not only the microbial poison which is absorbed, but that micro-organisms pass through the walls of the intestines and enter the blood, producing a direct infection. Insomnia, vertigo, dizziness, rheumatism, high arterial tension, arterial sclerosis and many of the nervous phenomena, such as neurasthenia, migraine and other sensory disturbances have their origin as a result of poisonous toxins.

We must aid suffering humanity by giving such succor as will at least to some extent overcome the results of this dissipation. If we would increase the length of life and prevent suffering, we must fortify the body by removing toxic poisons therefrom.

A careful and systematic examination should be made of the body with reference to all the vital organs, the secretions, blood, blood pressure and the nervous system. An adequate knowledge of physical diagnosis is essential. Upon the accuracy with which this is carried out will depend success or failure in the treatment.

The Value of Physiologic Therapeutics.

Rational dietetics is our armamentarium for preventing the cause. Hygiene and selective therapeutic measures with a proper regimen for the individual cases to overcome the results. The use of drugs to disinfect the intestinal tract has been disappointing. The principle effect being to lessen absorption of bacterial products, but does not reduce putrefaction.

Strasburger believes the most favorable results are secured by aiding the intestine to discharge its normal functions. If the digestive tract can be enabled to digest the food more completely, there will be less pabulum as a suitable material for the development of microbes. We must prevent the accumulation in the intestines of that gummy, thick, tenacious mud, which the most powerful cathartic will not remove. Fortify and renew the normal functions of the intestine so that it will effectually remove and cleanse itself of the offending material. Prolonged mastication will not prevent intestinal contamination or microbial invasion.

The patient should have individual instruction in the art of mastication. The great trouble in all lines of therapy is, that we do not individualize enough. There can not be a routine in any line of treatment which proves altogether satisfactory.

Physiologic Therapeutics offers more advantages for correcting the results of over eating than any other branch of therapy. We have at our command Mechanical Vibration, Faradization, Galvanization,

Hydrotherapy, Electric oscillations, Thermo-therapy, the High-Frequency currents, together with pure water and that great tonic, cold air and exercise, and pure, wholesome food.

High arterial tension as a result of this toxic accumulation is one of the most frequent results of over-eating and the lack of proper exercise. In such conditions Physiologic Therapeutics plays one of her most brilliant accomplishments.

The High-Frequency currents not only lower the high tension, but by their electro-chemical effect upon the tissues, increase metabolism and elimination. Glandular secretion, especially the ductless glands, is markedly increased.

The combination of the High-Frequency currents with the electric light bath cabinet is one of the most scientific and useful inventions for the treatment of the toxic conditions.

In the early stages of arterial sclerosis, Bright's disease, faulty metabolism, neurasthenia, rheumatism, and other conditions of like origin, there is nothing which will give more satisfactory results.

An abundance of pure water is one of the most important elements which enter the organism. This is best secured at some of the Spas or thermal institutions, the advantages being the open country with its pure and invigorating air, pure water and the quietude and rest which may be had in such environments. Everyone can not visit the Spas, so in such cases I recommend the use of some of the mineral waters, of which I regard the Still Rock bottled by the White Rock Company as the best. This water is noted for its purity and medicinal qualities and is one of the best waters obtainable.

We should know the physiologic effect of the various food products and prescribe them intelligently in the individual cases. Fasting every second day in many of these cases will be of great assistance in treatment. It rests the heart, stomach and bowels, promotes secretion and peristaltic elimination and stores up vital forces. After we have done all we can to correct the infected body, have restored the bowel to its most perfect condition possible, if infection still continues, then I encourage surgery, and recommend that the offending section of the intestine be removed.

An Encouraging Outlook.

In closing I wish to say that pills and powders are passing. Prejudice, ignorance and superstition are lessening.

Members of the profession are more liberal. A few years ago Physiologic Therapeutics was greatly discredited. This was due to the over-zealous enthusiasm of the faddist. Conservative men have been satisfied to study and investigate and to accept results for their

true value. Judicious hands have placed physiological therapy upon the high plane which it so richly deserves.

We have one great hinderance, the lack of the standardization of the various methods. We need an authoritative standardization which will become a universal guide for all advanced workers, as well as the beginner. Those men are doing a grand work, who are earnestly seeking to relieve and benefit those who are suffering from the results of the habit and dissipation of over eating.

310 Trust Building.

NUTRITIONAL AND OTHER FACTORS IN THE TUBERCULOSIS PROBLEM.

BY GILLIFORD B. SWEENEY, M. D., PITTSBURG, PA.

Fortunately the profession and the laity have been disillusioned upon some points of vital interest in connection with the care of the tuberculous patient. The call for sixty-day volunteers met with a hearty response. Enthusiasts saw the end of the white plague and found occasion for no more substantial domicile for the tuberculous patient than the canvas tent, the house-roof or the fire escape. But this effervescent form of optimism of necessity ran its course. The most sanguine have settled down to a realization of the plain fact that we have before us a momentous problem, involving many civic and social factors, which must be handled judiciously and with deliberation. The general awakening of society upon questions of hygiene, sanitation and nutrition mean much in the right direction.

We must realize that we have an infectious disease to deal with, whose specific germ possesses marvelous powers of adaptability. The tubercle bacillus cannot be said to be invariably aggressive in its excursions. Under favorable circumstances, we find it rampant and uncompromising in its onslaught. What can inspire the physician with greater solicitude than the fulminant attack of phthisis florida which often succeeds the grip? Again the disease displays a disposition toward what seems like spontaneous cure or yields to measures of a most elementary nature. Hence arise the diversity of opinions and expressions concerning the nature and gravity of the task which lies before us.

Happily, however, we have come to recognize some broad, basic principles and the contemplation of these is the task set before us in the remarks which follow.

Climate An Important Factor.

Perhaps no one factor in the tuberculous problem has caused more controversy than that of climatology. From the radical doctrine exerted upon the tuberculous subject to favorable climatic conditions,

to its antithesis, the apostle of rest and hyper-nutrition, the well-poised physician learns that the contention of both is partially true and that the happy middle ground is the logical position for him to assume.

No more pitiable spectacle can be imagined than that of the tuberculous invalid, stranded in a community made up of people unable to bestow gratuitous care or charity upon their unwelcome visitor. Homesick and lacking the most elementary comforts to which he was accustomed at home, is it any wonder that he becomes disheartened and prays for death to relieve him from his misery? Yet this is the unwritten story of thousands of tuberculous patients who were cheerily admonished to "take the first train for the West." With little or no specific knowledge upon the part of the physician of climatic conditions, the patient was told to "go to Colorado or California," as if it were only a matter of crossing the *dead line* and entering the Elysian fields of perennial health. No more vicious have been such teachings than those of the physician who insists that climate plays but little or no part in the successful care of the tuberculous subject.

That certain localities are inherently detrimental to the health of those inhabiting them and especially unfavorable to those having a tendency toward pulmonary affections is a fact that requires no corroborative proof; we may mention the lowlands of Ireland and the extreme northwestern part of the United States as conspicuous instances. On the other hand we may readily find examples of the other extreme, as evinced among the inhabitants of the shores of the Mediterranean, the Andes in South America and in the neighborhood of our own western mountain ranges. For this reason the final issue must depend largely upon what is available for the individual who invokes the beneficent influence of a climatic change. Suffice to say that wholesome food, comfortable housing and congenial companionship in a locality not particularly favorable to convalescence will far outweigh the benefits derived from a salubrious climate, devoid of those attendant comforts.

Registration of Tuberculous Patients.

The iteration of truisms such as these may seem tiresome and commonplace, but so long as they are conspicuous by their non-observance, we may be excused for dwelling upon them. We are rapidly reaching the point where every state will be required to care for its own tuberculous patients. When restrictive legislation is enacted, incalculable benefits will alike accrue to the individual and the community. A strict registration of tuberculous persons in their home states, with a definite condition placed upon their migration to neighboring or remote parts of the country would work to the ultimate advantage of both individual and public. Not the least of these advantages would be a minimizing of the number of indigent, tuberculous

persons, who are now aimlessly wandering about from place to place, imperiling the health of the communities in which they sojourn. Of course such systematized jurisdiction implies national paternalism and the sooner this is realized the sooner will our efforts be directed along lines which will show a maximum of effective and permanent results for a minimum expenditure of money.

* * * * *

In a previous article (*Animal Therapy, Its Relation to Immunity in the Treatment of Tuberculosis*), I took occasion to remark that "tuberculosis is essentially a disease dependent upon impaired nutrition." The arrest and cure of the disease imply conscientious, attention to every detail of this phase of our treatment. No hard and fast rules can be successfully laid down to govern the dietary of even a majority of our tubercular patients. Each may be said to be a law unto himself. To insist upon an arbitrary dietary is to court defeat. Aside from milk and eggs, which are well borne by probably 50 per cent of tubercular patients, it is impossible to anticipate the regimen of any given subject.

In a small percentage of tuberculous persons will be found an intolerance of food which is largely psychical. The overcoming of this condition calls for the greatest skill upon the part of the physician. A firm insistence upon a gradually increasing dietary should be our first requirement. The patient's expressions as regards discomfort, indigestion, etc., under these circumstances are not dependable. Inspection of the contents of the stomach and the stools is the only reliable test of the results of forced feeding in these cases, until actual gain in weight takes place.

Beyond all these considerations there is a question which confronts us and which we cannot ignore. How far is our present treatment of tuberculosis actually curative? We are dealing with an infectious disease. So long as the agent of infection, the tubercle bacillus, is living within the body that patient cannot be said to be cured. Fifty per cent of the patients dismissed from our tuberculosis sanatoria "cured" show living tubercle bacilli in the blood, the sputum or some other of the secretions.

Here is another fact to hurl at our cherished idols. Forty per cent of the cases of tuberculosis originate in country or suburban districts! Fresh air, plain food and the simple life—how much have these done to prevent the development of the disease in this forty per cent?

Does Location Influence the Incidence of Tuberculosis?

Here is something else to think about. In the East Side of New York City is the most overcrowded district in the world. To say

nothing of the absence of practically everything which makes for sanitary and hygienic conditions, we find that tuberculosis prevails to a less extent, according to the relative population, than in any other portion of the city. What is the explanation to this condition? What is there to offset the uncleanly personal habits of the Hebrew element, of which this district is almost exclusively composed? The impure air in which they live is vitiated to the last degree by being breathed over and over again, at the same time that it is super-saturated with noxious gases, born of putrefaction!

These poor people are all overworked, most of them in sweat-shops. From childhood on, through interminable hours of toil they labor, we may say without a ray of light or hope, and yet amongst them the death rate from tuberculosis is surprisingly low.

The first exception among the etiological factors is the character of the food consumed by them. Almost without exception the orthodox Jew, however poor, strictly obeys the Mosaic law as to food and drink. Much of the meat which is rejected by their religious officials is subsequently sold to Christians, who eat it without a thought of its effects upon their health.

The second exception applies to the use of alcohol. The Jewish people have no drink problem; they use stimulants, but in moderation, almost never to such an extent as to in any way interfere with health.

The third exception is that the Jewish race during its forty centuries of existence has undoubtedly acquired a marked degree of immunity toward tuberculosis.

In the light of these observations we are confronted by the fact that however distasteful and at variance with our present day theories, the race which enjoys the greatest immunity toward tuberculosis does so, not on account of conformity to the popular ideas upon the subject, *but in defiance of them!*

Immunity Most Important of All.

Six years ago while in the service of Professor Behring, at Marburg University, I reached this conclusion: *That the radical cure of tuberculosis means nothing short of immunization of the patient.*

The immunizing agent which operates within the organism of one suffering from an infectious disease is a subtle agent. It is impossible to isolate and define its specific properties. Chemistry may tell us what its constituents are, but this gives us little information as to its mode of operation *in vivo*.

Von Behring was able to produce an artificial immunity to tuberculosis in cattle, which satisfied the most rigid clinical and experimental tests and he perfected a technique which is endorsed by scientific

veterinarians and has been employed with success as a practical measure by numerous large stock raisers and proprietors of dairy herds in southern Germany, Hungary and Bohemia.

In conformity with Professor von Behring's suggestion, I began a series of experiments, having for their object the transmission of this immunity from one member of the bovine family to another. A detailed description of this work will be found in the records of Marburg University.*

The materials used in the immunizing process were obtained from the lymphatic system of the bullock and were prepared as follows: The immunized animal having been slaughtered, the contents of the thoracic duct and other lymph reservoirs, rich in lymphocytes, was collected under strict antiseptic precautions. An expressed extract was then made from the lymphatic glands, which was filtered under high pressure. The filtrate was then combined with the lymph which had already been obtained. This combined product representing all of the dynamic constituents of the lymphatic system was then preserved by the D'Arsonval process.

The results of these efforts were eminently successful. After a course of injections of this anti-tuberculous lymph compound, I found it impossible to set up a tuberculous condition in the immunized bullock, even through repeated injections of an emulsion containing the most active and virulent tubercle bacilli.

Immunizing Man the Main Object.

It will be readily understood that my ultimate ambition was to confer this acquired immunity upon the human subject. The similarity in the organism of the human and bovine families; the fact that tuberculosis is transmissible from one to the other, these factors were considered and reckoned with in undertaking this process of immunization in behalf of humanity.

The results fully confirmed my most sanguine expectations.

Following daily hypodermic injections of the above described lymph, I observed these effects:

First, the patient's temperature gradually approached the normal, whether persistently above or periodically below. Second, night sweats when present rapidly subsided. Third, persistent cough and profuse expectoration were controlled, with decrease and clearing of the secretions. Fourth, microscopic investigation showed a gradual diminution in the number of bacilli to the field until they finally disappeared. There was also an increase in strength and weight.

*Beiträge zur experimentelles therapie. Herausgegeben von Prof. Dr. E. von Behring, wirklicher Geheimer Rath, Director für Hygiene und Experimentelle Therapie der Universität Marburg, Heft 7.

My observations have been confirmed by other physicians, under widely varying conditions, climatic and otherwise. I regret to say that physicians have seen fit to use this remedy in treating their patients, "as a last resort" in incurable cases of tuberculosis. Of course, this is folly, alike unjust to the agent employed, the physician and most of all to the patient.

This agent has never been vaunted as a cure-all. I have found it curative through its *immunizing power in curable cases* of tuberculosis. I have not proclaimed it from the house-tops. If it has the merit, which I believe it possesses, it will survive. If not, it will be buried along with a legion of specifics which have preceded it!

"Let him who thinks he stands, take heed lest he fall." We have not yet solved this problem fully and satisfactorily. As Colonel Roosevelt said, in a recent speech, "there is plenty of good fighting yet."

* * * * *

In the end we must win. In the east a new light is breaking and already we feel the inspiration of a new day.

519 Smith Block.

PRECISION IN ROENTGEN WORK.

BY PRESTON M. HICKEY, M. D., DETROIT, MICH.

Editor American Quarterly of Roentgenology; Professor of Roentgenology, Detroit College of Medicine; Roentgenologist to Harper and St. Mary's Hospitals; etc.

It is evident that the day for sloppy X-ray work has passed. The use of the Roentgen ray as a diagnostic agent demands precision in the technique of its application, and experience in the reading of plates. The mere possession of a generating apparatus, with only an old-fashioned tube holder, and no means of permitting the use of central rays is fatal to good work.

In beginning the examination of a given extremity, a short history should be obtained and a careful inspection of the part should be made. This preliminary inspection will often show the area which it is especially desired to portray upon the plate. The skin over the center of the part should be marked with a dermatographic pencil. In the investigation of joints, as the hip or knee joint, the marking of the bony landmarks, as the tip of the great trochanter, the outline of the patella or the extreme edge of the condyles of the femur will be of great value. Some type of tubular diaphragm, whether mounted upon a table or supported upon a stand, should be

employed. Convenient attachments should be provided, so that the focal point of the tube should correspond to the center of this diaphragm. If the X-ray tube is removed, and a centering pointer is substituted, the operator can easily adjust the tubular diaphragm so that the central rays will pass through the marked area upon the skin. If the X-ray tube is properly centered and the tubular diaphragm is properly adjusted, the area under examination will be more precisely examined. If the distance from the focal point of the tube to the plate is carefully measured, the operator will then have a gauge as to the length of exposure by comparing with his previous experience.

Gauging the Tube Penetration.

The use of a milliammeter in circuit with the tube will be of the greatest help in giving one information about the vacuum of the tube. If one adopts a fixed point on his rheostat, either with the transformer or with a coil (always using the same condition of interrupter), for the preliminary testing of the tube, and then carefully notes the milliammeter reading, he will have a very accurate gauge as to the penetration of the tube. Any inaccurate measure, such as looking at the bones of the hand with the fluoroscope, is passé and dangerous.

If the patient is allowed to lie upon the table and no precise methods of immobilization are employed, the plate will usually show blurred outlines of the part depicted. For the securing of proper immobilization the use of large, partly filled sand bags is of great value. In making plates of the head, some mechanical clamp which will rigidly fix the head during the exposure, will obviate the respiratory and cardiac movements and contribute greatly to the clearness and definition. It is impossible to make clean cut head plates unless the movements of the head, due to the imparted respiratory and cardiac impulses, are absolutely cut off. It is impossible to secure proper plates showing bone detail, of the neck and of the head of the femur unless the entire limb and body are immobilized by sand bags. One cannot obtain proper vertical plates of the knee or ankle unless the foot is rigidly held in a perpendicular position.

More discredit has been cast upon the Roentgen ray by inaccurate methods of localization of foreign bodies than by any other procedure. In this localization a preliminary plate should be made so as to find the general location of the extraneous material. When the general location has been determined, a mark should be placed upon the skin with a dermatographic pencil. The tubular diaphragm should then be accurately centered over this mark upon the skin, and plates which have been made by this procedure should be employed for localiza-

tion. The first plates of the preliminary localization, should never be employed for the guidance of operative procedure.

Many errors arise from the fact that too few plates are made of the part under examination. Now that the exposures are so short that the danger of a dermatitis is practically entirely eliminated, it is better to make sufficient plates to thoroughly investigate the part desired. The worker in roentgenology should not base his charge, as is sometimes done, as to whether he makes one plate or two plates, but should charge a fee for the diagnosis, irrespective of the number of plates employed.

In the examination of the abdominal organs, including particularly the spine and kidneys, no plates should be made until after the patient has been properly prepared for examination. Unless the intestine is thoroughly emptied, reliable plates cannot be obtained.

Examine the Plates Properly.

If plates have been made with a proper precise technique, they are of little value unless they are examined in a proper manner. To simply hold a plate up before the light and cursorily examine it, and then give an off-hand diagnosis is also fatal to good roentgen work. The plate should be preferably dried, if necessary in front of an electric fan, if time is of importance, and the interpreter should sit down in front of the plate with extraneous light carefully excluded, and go over the plate carefully. If this is done many points will come out which would otherwise escape notice.

A convenient way is to take a small pointer and trace out the outlines of all the important bones and important soft structures. In this way, slight though important deviations from normal will be detected.

The roentgenologist has now a very important part in the field of medicine, and he fails of his mission if he examines his plates in a rapid, cursory manner. A number of sad cases have come under the writer's observation where the diagnosis was perfectly plain from the first set of plates which had been made, but where the patient suffered from delay in a proper diagnosis due to hasty and incompetent examination of the negatives. Recently a case came under the writer's observation where there was a delay of one whole year in the recognition of a slow-growing osteo-sarcoma of the lower end of the femur.

The writer can simply summarize that in roentgenology, as in all other branches of medicine, if the work is worth doing at all it is worth doing well.

32 Adams Avenue W.

VACCINE THERAPY IN GENITO-URINARY INFECTIONS.

BY LEWIS WINE BREMERMAN, A. M., M. D., CHICAGO, ILL.

Professor Genito-Urinary Surgery, Medical Department Loyola University; Professor Genito-Surgery, Practitioners' College; Member American Urological Association.

The treatment of localized infections with the injections of either the autogenous or commercial (stock) vaccines has been received by the specialist with enthusiasm, but by the general practitioner with considerable conservatism, yet a very logical conservatism. It is the trend of scientific medicine today to accept nothing until thorough investigation, both scientific and clinical, has proven a product or method of treatment of value, so it is with the vaccine treatment of infections.

A Method Available for All Physicians.

The general practitioner felt that this form of treatment was out of reach owing to the vast amount of technique supposed necessary in the administration of vaccines. This is an entirely mistaken idea, the vaccines may be used with equal facility both by the practitioner in the city or the "cross-roads doctor." If the autogenous vaccines are used it requires more care than if the stock or commercial variety is employed. All that it is necessary to do in these cases of genito-urinary infections is to collect a sample of urine in a sterile receptacle and forward it to a good laboratory—taking it for granted that the physician has neither the time nor the apparatus for making his cultures. The laboratory will produce the cultures and will prepare the emulsions of the dead organisms which may be diluted to the proper dose. These are mailed or expressed to the physician sending the sample, and a few days is all that is required to accomplish this procedure. Even if the stock vaccines are employed, the variety of infectious organism must be absolutely ascertained. It also is known whether or not the infection is a mixed one, for if such be the case, it is very evident that the vaccine of one variety will be followed with little result. Combinations frequently must be employed.

In considering the infection of the uro-genital tract I will discuss briefly those which are the most frequent in occurrence:

1. Gonococcic infection; 2, colon infection; 3, mixed infection; and 4, tubercle infection.

Gonococcic Infections.

Gonococcic infections are the most common, both in the large city and smaller town. A few years ago gonorrheal conditions were fairly uncommon in small towns, but owing to the modern improvements in transportation large sections of country now contain many people who are practically in the back yard of the city, easy communication is had, with a resultant increased percentage of venereal in-

fections. So this type of disease is of vast importance to the physician at large. Numerous cases of acute specific anterior urethritis have been treated with vaccines, both the commercial and the autogenous. These experiments were carried out with great care. The patients were closely watched and the cases carefully tabulated. No other treatment, either local or internal, was given, the patients, however, were instructed in the ordinary hygienic precautions usually given this class of cases.

A smaller group of cases were observed that not only had acute anterior involvement but had the condition complicated with a posterior urethritis. These cases all had cultures made and daily examinations so as to ascertain accurately whether or not the proven infection was being influenced by the injections and the progress toward improvement. Various doses were administered ranging from 20,000,000 to 400,000,000 dead germs. These injections were repeated in some cases, when the dosage was small and the reaction slight, as often as every other day, in other cases once in five or seven days. The reaction that I base my dosage upon is not a marked constitutional one. I prefer not to obtain a reaction so severe. When there is evident a marked local reaction around the seat of injection with only a very slight constitutional phenomena I feel that the dose is sufficiently large. It will be found that a smaller dose more frequently repeated is accompanied with a better result than large doses; my experiments prove this beyond a doubt.

The conclusions based upon my observations of these acutely infected gonococcic cases are that the vaccines do not produce any notable result whatsoever, except possibly a slight tendency to shorten the attack and to prevent complications. It must not be forgotten that my investigations were carried out on cases where no other form of treatment was used. I do feel that gonococcic vaccines have a distinct place in gonorrheal therapy and that if used with judgment *in conjunction with* local and internal treatment will shorten the attack and render the chances of complications less liable.

Value in Chronic Infections.

Chronic infection of gonococcic origin which involves the posterior urethra, prostate and seminal vesicles gives the surgeon much anxiety as they are exceedingly difficult to handle, the treatment must extend over a long period and even then it seems that certain classes of these cases will not respond to treatment and occasionally get worse while under observation. These cases will improve some times almost theatrically, with a combination of autogenous vaccines and routine treatment. I have quite a few such cases in my reports. It must be remembered that the infection in the old chronic cases are

usually mixed and if the commercial vaccines are given the bacteriology of the infection must first be thoroughly investigated.

Colon infections may occur anywhere along the genito-urinary tract but the source of the infection, is in most cases the kidney pelvis, bladder and prostate. One or all of these structures may be involved in the same individual.

I am reporting elsewhere forty-four cases of colon infection of the pelvis of the kidney and have shown results with various forms of treatment. My observation of these cases led me to the following conclusions: that the vaccines in colon infections will act more favorably than the vaccines given in any other form of urinary infection.

In these forty-four cases, eleven were treated by lavage of the kidney pelvis through a ureteral catheter; eleven were treated by stock vaccines; eleven treated by autogenous vaccines, and eleven treated with a combination of lavage and autogenous vaccines. Lavage of the pelvis will eradicate the infection in the majority of cases, some will only be improved. The stock vaccines fail to show results in about fifty per cent of the cases, the other fifty per cent improving. Autogenous vaccines failed in two cases out of the eleven, cleaned up four cases entirely, improved the remaining. In the combination of lavage and autogenous vaccines every case except one became well entirely, very much more rapidly than with lavage only or vaccines alone. The reason for this is that the infected area is connected with the bladder by a long, narrow tube, the ureter, which prevents free drainage, the lavage washes out and stimulates the mucosa of the pelvis and the catheter dilates the ureter, combining the surgical principles with the vaccine treatment. The one case became very much better while under treatment, all of the disagreeable bladder symptoms rapidly disappeared and the patient was very comfortable. The infection was a unilateral one and the urine was so thick with pus that it would not drain through the ureteral catheter. Drainage was not possible until the pelvic contents were diluted with boric acid solution. The patient became so much improved that he left for his home in the west over a year ago to attend to some urgent business, with the promise that he would return in a short time. He did not do so and I have been informed recently that he had a relapse and has had a nephrectomy performed.

Infections With the Tubercle Bacillus.

Tubercular infection of the urinary tract presents altogether different aspects than any other infection. The surgeon usually sees the condition late, when only surgical measures are indicated. I thoroughly believe and my experience bears me out in this, that if proper vaccine methods were used early that many of these cases would

never come to the operating table. The stock preparations of tuberculin T. R. have given some very excellent results. In one case where there was an infection of the epididymitis, vesicle, prostate, bladder and kidney responded most remarkably to the injections of T. R. He became so much improved that I lost track of him, the patient having stopped treatment. Other forms of mixed infection or straight infection will respond to the vaccines and it is well always to carry out the routine methods of treatment in combination.

Vaccines in the treatment of genito-urinary infections, no matter of what character, have a distinct place in the therapy of this form of disease, the dosage to depend upon either the local or constitutional reaction. It is not necessary to follow up each case by estimating the opsonic index as this requires considerable laboratory technique beyond the convenience of most practitioners. However, we must not be too radical and feel that we have a line of treatment that will be specific in each case for we may be doomed to disappointment, yet with care in isolating the infection, and in the preparation of the vaccine, with proper attention to the technique of administration and dosage we have a form of treatment which will add materially to our therapeutic armamentarium.

72 Madison Street.

PRACTICAL POINTS IN HIGH FREQUENCY VACUUM TUBE TECHNIQUE.

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Does Lighting of Vacuum Tubes Prove the Existence of High Frequency Current?

There seems to be an opinion prevalent that any instrument capable of lighting up a vacuum tube is producing a high frequency current. This is not true.

Genuine high frequency currents must comply with the name; that is, they must possess *frequency* which is a characteristic limited to an alternating current; and the frequency must be *high*. Many authors believe 10,000 cycles or oscillations per second to be the proper dividing line between medium and high frequency currents. I personally prefer to place this at 100,000, because these oscillations reach up into the millions in many instances and 10,000 seems too low a dividing line.

Cataphoresis by Means of High Frequency Currents.

Although strong claims have been made concerning the value of high frequency currents for the purpose of carrying substances into the tissues, I believe they are so far inferior to the galvanic current for this purpose, that they are scarcely entitled to consideration.

The principle upon which cataphoresis depends is the separating of the particles (ions) composing the fluid by reason of the attraction possessed for them by the poles of the battery; thus all positive elements remain at or are drawn through the tissues toward the negative pole, and vice-versa. Now, in using high frequency currents, which are alternating, the attraction would be first in one direction and then in the other, and as a result practically nothing would be accomplished.

It has been proved, however, that when the alternations are slow, as in the sinusoidal current, then the ionic action is greater, thus sinusoidal currents possess greater cataphoric properties than high frequency currents and the cataphoric value lessens as the frequency increases.

In conclusion, therefore, I maintain that the cataphoric action of the high frequency current is too feeble to commend it for general use, for which purpose nothing takes the place of the galvanic current.

Selection of a Modality.

I am asked frequently what indication I make use of in selecting the form of high frequency current to use; that is, whether uni-polar or bi-polar, and also when high frequency currents would be preferred to faradism or the sinusoidal currents.

I have been accustomed roughly to select uni-polar applications with the vacuum tube or other forms of electrodes where an essentially local effect was desired, or required; making use of the bi-polar method, or where a general or systematic effect was preferred. Thus, in skin diseases, chronic ulcers, catarrhal conditions, etc., the glass vacuum tube would be selected, whereas, in arterio-sclerosis, diabetes, chronic rheumatism, etc., I prefer the D'Arsonval current, either by auto-condensation or auto-conduction, this being a bi-polar method. In the latter class of cases, the bi-polar Tesla current may be used. On the other hand in some conditions such as insomnia, both local and general treatment have been found to be very efficacious. For instance, auto-condensation with local applications over the supra-orbital region and to the cervical region have proved superior in my experience to either one alone. At this point I wish to state that a patient may receive the D'Arsonval current on the couch, and also be treated locally with the resonator spark coincidentally with the auto-condensation; or while one patient is on the couch receiving auto-condensation, another may be treated locally with the vacuum tube,

as the use of one part of the apparatus by no means interferes with the use of the other, and sometimes this enables one to save time. My rule for making a choice between the general application of high frequency currents and faradism and sinusoidal currents is based on the idea that the faradic current produces essentially contractions of single muscles; the sinusoidal current of a group of muscles and the high frequency current, owing to its rapid oscillations fails to produce gross muscular contractions, but exerts its effect upon the individual cells making up the tissues, thus making it especially indicated where cellular massage or, in other words, nutritional effects are desired. When the current is used locally, it must not be inferred that it acts only at that point. The current penetrates the tissues, but its intensity is greatest at the point of entrance.

The Vacuum Tube in Diseases of Women.

The high frequency current is useful in all catarrhal conditions wherever situated, consequently its indication in certain cases is apparent.

Nor is its application limited to simple catarrhal conditions, such as leucorrhea. In my experience it has proved a most satisfactory adjunct to other measures even in the treatment of gonorrhea in the female.

By reason of its power of penetrating into the tissues it becomes useful in tubular and ovarian disease. I have given in an earlier paper the technique of the vaginal application of the vacuum tube, but it will bear repetition at this time.

I use an insulated (Titus) vaginal tube in order to get the full effect of the current within the vagina.

The patient is placed on the table in the dorsal position with the feet resting on the stirrups. The sterilized tube in my own type of a movable socket handle, is lubricated and inserted into the vagina, being carried back into the posterior cul-de-sac so that the cervix rests in contact with the depression or hollow in the end of the tube. It is not possible always to accomplish the latter, but one can at least keep the tube in contact with the cervix. The movable handle is now bent down almost at a right angle to the tube, so that it touches the table, when a portion of the patient's skirt is folded over it, thus thoroughly anchoring the tube and handle and preventing the tube from slipping out. The wire or cord connecting with the resonator or coil is passed out under one leg, taking care that it is nowhere in contact with the latter.

A towel is then wrapped around the metal at junction of tube and socket so that it cannot tip sideways and give the patient a shock. The patient's skirt is then drawn over her knees and the current turned on.

I again reiterate my rule never to give this treatment for longer than seven minutes at a sitting, in order to avoid surface burns on the mucous membrane. The treatment may be repeated at frequent intervals, even twice a day, if the physician considers the case sufficiently urgent. There seems to be no danger of a burn from these frequent short applications.

(To be continued.)

THE ACTUAL TREATMENT OF DISEASE BY DIET.

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Some qualification of this title is necessary to guard against the impression that the writer is so enthusiastic as to believe that dietetics—or any other single branch of therapeutics—can be employed to the exclusion of general measures in the treatment of disease. In many instances, the medical attendant neglects the diet altogether; and, in the office treatment of trivial disorders, such neglect is excusable. In other cases, the diet is left to the nurse, a practice not so bad when the nurse is a laywoman and a good cook and when the regimen is along simple lines, as when she has been trained in "invalid cookery," meaning the preparation of a peculiar line of dishes not used by persons in health. Even when the attendant has given considerable time to the study of dietetics and personally supervises the feeding of the patient, he is apt to regard the diet merely as a means of keeping the patient alive and the choice of food as limited only by the exclusion of substances liable to disarrange the digestion or injure the digestive organs. The object of the present paper is to point out the utility of food stuffs and dietetic adjuvants to modify the disease itself in certain cases and the necessity of controlling the diet not only with reference to its nutritive and locally harmful possibilities but as one would regulate the various drugs, forms of lavage, massage, etc., in order to avoid exacerbations of the pathologic process or the production of complications. The subject is too large to admit of more than desultory, suggestive discussion.

At the outset, it should be thoroughly understood that, neither from the standpoint of nutrition nor of the special purpose of this paper, can the physician accomplish anything of importance with dietetics, unless he knows the composition of food stuffs, the amount of their active principles necessary in health at various ages and under

various conditions and what becomes of them in the body, and also the rudiments of their preparation for use. Otherwise, he will practice dietetics as blindly as he would prescribe drugs if he knew nothing of materia medica, dosage and pharmacology.

The Choice of Food Stuffs on Account of the Positive Therapeutic Influence of Various Ingredients.

1. Iron. It has been shown by feeding experiments that normal animals may maintain and that animals rendered anaemic by bleeding may recuperate sufficient haemoglobin from a diet iron-free except as to inorganic compounds. The absorption of inorganic iron salts through the duodenum may also be demonstrated both macroscopically and microscopically by simple staining experiments. Nevertheless, the writer believes that almost the sole dispenser of iron should be the butcher or grocer, not the druggist. It is true that anaemia may persist on a diet rich in iron. So, too, does it commonly persist on all sorts of pharmaceutic preparations, inorganic and organic, and for the reason that very few cases of anaemia are essentially due to iron deprivation. On the contrary, they are usually cases quite analogous to indigestion, malassimilation or excessive waste of other nutrients. The system requires about 10 centigrams of iron daily to compensate for the normal elimination and it may be more than a coincidence that the average amount of solid food consumed in a day is 1,000 grams and that, speaking broadly, this mass contains about $1/10,000$ of iron. Vegetable substances having a marked color are commonly regarded as fairly rich in iron and spinach is said to be especially so. Blood contains rather more than $1/1,000$ of iron and it is really not at all disagreeable to the taste but is usually disgusting for aesthetic reasons. Bovine may be used in place of blood, simply because most patients do not realize that it really is a preserved blood. Lean meat contains from $1/3$ to 1 part of iron per 1,000. Hence, 100 to 300 grams a day contains the ration of iron, along with an adequate and not excessive amount of proteid. By choosing different kinds of meat, and cooking in different ways, sufficient variety may be obtained.

2. Thyroid. The thyroid contains practically all of the iodine of the body and, in various forms of hypothyroidism, is specific. As a matter of convenience, dry thyroid, its extract, or iodothyrene, may be used.

3. Other visceral extracts. No other animal extract has, thus far, assumed the practical therapeutic value of that of the thyroid, although the suprarenal gland, its extract or adrenalin, is efficient in raising arterial pressure and in controlling haemorrhage whenever the circumstances are such as to render the bleeding amenable to con-

striction of the arterioles. It usually fails in Addison's disease, not only because the suprarenal is something more than a ductless gland but because, in the writer's opinion, Addison's disease is a good deal more than a suprarenal lesion. Kidney extracts have, in a very limited personal experience, not only failed to give relief but have increased albuminuria. There is nothing in physiology to lead one to expect otherwise. Ovarian, testicular and mammary extracts seem, at times, to produce some favorable influence.

The thymus, spleen, liver and kidney may be used to supply nucleins and, while, of course, contraindicated in lithaemic and gouty conditions, are probably of value in combating tuberculosis. Parenthetically, it may be said that meats and milk of animals relatively immune to tuberculosis, as the sheep and goat, deserve a thorough trial. Fats are said to be inimical to the tubercle bacillus. This does not justify overtaxing the digestion with fats but indicates a moderately rich, fatty ration. Whether there is anything in cod liver oil that compensates for its objectionable features is an open question. In the writer's opinion, it is much better to use fatty nuts, cream, butter, olive oil, mayonnaise, salt pork, etc., and inunctions of lanolin.

Digestive ferments, HCl, etc., may also, by an extension of terms, be included under dietetics, since they are natural products and potentially animal extracts.

4. Antiscorbutics. It need not here be questioned whether there is one antiscorbutic principle or several or what the exact principle or principles are. Nor need we deny that certain groups of clinical scurvy are infectious. It has been abundantly demonstrated that scurvy, in the ordinary sense, is relieved by either fresh or preserved fruits, by fresh including canned, if not dried or cooked vegetables, and that scurvy in infants is due to a lack of fresh milk. It may be pointed out that scurvy may develop, especially in alcoholics, from mere indifference to fruits and vegetables. The writer has seen two well marked cases and quite a number of atypic ones in which the therapeutic (dietetic) test has confirmed the tentative diagnosis. It should be remembered that scurvy is a form of purpura and is probably often encountered under the more general diagnostic term.

5. Gelatin. Beside being a fuel-food, though not a reconstructive like true proteid, gelatin is indicated as a styptic in many forms of dribbling internal hæmorrhage, in purpuras and even in hæmophilia. Of course, many circumstances may conduce to failure, but the same is true of practically all therapeutic measures. When indicated, it is best given as an article of food, as lemon or coffee jelly and even when other more directly medicinal measures are employed, it is well to remember gelatin in regulating the diet. Care should be taken to

get a genuine animal gelatin, not a vegetable gum, and to cook for half to one hour as a precaution against tetanus, especially if there is a suspicion of any form of solution of continuity of the alimentary mucous membrane.

6. Lecithin is, at present, most conveniently dispensed as egg yolk. Brains may also be served as a conveyor of lecithin.

7. Lime may theoretically be given in food stuffs. Unfortunately, it is difficult, with our present knowledge, to choose food stuffs so as either to secure or avoid an excess of soluble lime.

8. The minimum of carbohydrate. With reference to the last point, it should be remembered that sugar aids in the solution of lime. Hence, there is good reason to regard a reasonable amount as beneficial for rickety infants and children. Quite aside from the nutritive value of carbohydrates, about 80 grams daily are necessary to prevent the development of acidosis, whether in diabetes or otherwise. The importance of titrating the urine and of making the simple Lange and Riegler tests for acetone and diacetic acid when the acidity is high, must now be recommended as something more than a personal hobby. The rational treatment of diabetes does not consist in glyco-phobia nor in attempting to fool the patient with sweet poisons, indigestible vegetables or starches to be swallowed and then destroyed by yeast. The minimum of carbohydrate and, if possible more, should almost always be given.

9. The body requires a certain range of salines, which cannot very easily be controlled by clinical tests. The only way to insure against saline deprivation is to give a variety of food stuffs. Sodium chlorid can rarely be reduced below 9 grams, of course, including what is present in natural food stuffs or added in the kitchen. 2,500 c. c. of water is required to make the normal loss by the four great emunctories, requiring 15 grams of salts to maintain the strength of the physiologic solution. Considerable salt is also indicated in hypochlorhydria, though an excess at any one time tends to inhibit gastric secretion.

10. So much has been written as to the importance of water itself that it suffices merely to mention this point in dietetics.

The Choice of Food Stuffs on Account of the Negative Influence of Various Ingredients.

It goes without saying that the diet in any case of importance should be checked so as to avoid a marked excess or deficit of any group of ingredients. In certain cases, there is a manifest indication to produce an excess or deficit along some particular line, to counteract an existing, opposite state. When an excess is indicated, it should always be reasonable in degree, seldom exceeding 125 per cent of the

physiologic maximum. When a deficit is indicated, it is sometimes advisable, for a time, to bring the amount as near zero as possible, but one must always have regard for the relative necessity and innocence of the ingredient in question.

In gout, lithaemia, nephritis, hepatic sclerosis, angio-sclerosis, intestinal putrefaction (marked by an excess of urinary indican) and high urinary acidity not due to acetone bodies, there is a general indication to reduce nitrogenous foods. The purin bodies should be reduced as much as possible, whereas proteids, and especially the relatively non-toxic vegetable proteids, should not be reduced below a total of 50 grams.

The reduction of fats, whether on account of obesity, indigestion—either intrinsic pancreatic or adventitious—or development of fatty acid intoxication may be as absolute as possible, since fats are not a necessity, being formed also from both proteid and carbohydrate. However, it is difficult to select a diet containing less than 20 grams.

On the other hand, the reduction of carbohydrates even in well marked diabetes, should not, except for brief periods, be below the 80 gram limit already mentioned. In diabetes of the grade in which the sugar is formed from fat and proteid ingesta and tissues, the writer would not express an opinion. Anyway, it is a case of "Damned if you do and damned if you don't."

Very varied affections of the alimentary canal call for the more or less prolonged exclusion of certain foods that are mechanically or chemically doing harm. For instance, in gastric dilatation, ptosis and atony, bulky foods should be excluded, also those liable to produce gas by fermentation or otherwise, or that contain gas, as effervescent beverages; also, any food stuff not readily reduced to a fine pulp, or that contains minute scales, as oatmeal, or dense particles, as some of the breakfast foods.

In hyperchlorhydria, the indications are to exclude salt, and, indeed, an absolute exclusion of sodium chlorid must ultimately prevent the formation of hydrogen chlorid. Spices and sapid dishes of all kinds, purins, etc., are also to be excluded since they stimulate glandular activity—when this action is not desired; when it is desired, all the so-called stomachics usually fail. Vinegar and highly acid fruits, pickles, etc., are also to be excluded since the acidity is directly increased in the stomach. In accordance with a law usually attributed to Pawlow, though well established clinically before his time, the diet should consist as largely as possible of substances which do not demand gastric juice for their digestion, carbohydrates, and especially sugars, as well as fats, and as little as possible of proteid, though bland proteids as of grains, eggs and milk, are useful to combine with

the HCl. In hyper-chlorhydria, we have probably the best example—not excepting diabetes and obesity—of a disease to be treated dietetically. Except to save time in relieving the symptoms, there is no need of any other treatment.

In gastric conditions, one is not forced to yield to digestive inability or bacterial complications, to the extent that one is in the case of the intestine. Indeed, a great dietetic mistake is to cut down the food whenever there is trouble in their digestion. This policy, once begun, is liable to lead to a worse and worse state when one realizes that the patient is close to the starvation point and having just as much digestive trouble as at the outset. In the case of the intestine, it is rarely that one can actually demonstrate an indigestion except of fats which, of course, can always be reduced without harm. Bacterial disturbances of the intestine may be roughly divided into two types, one involving mostly proteids, with formation of indol and appearance of indican in the urine, there being not much intestinal gas but of strong odor, commonly designated sulphurous but really due to skatol; while the other type is characterized by acid faeces, much gas, of not so disagreeable odor and quite inflammable from the presence of H and CH₄ (methane), and negative as to indol and indican. The latter type is mainly due to fermentation of carbohydrates, including cellulose. In either case, there is a strong indication to change the diet so as to reduce the virulence of particular strains of bacteria. In the former type, lactic acid bacilli and buttermilk are of service—though not nearly so valuable as originally claimed—while, in the latter type, they would obviously render the condition worse. A third type is due especially to rancidity of fats, but it is not so common, nor so distinctive. In this type, there being usually biliary insufficiency or obstruction, with or without pancreatic failure, fats must be reduced so far as possible.

So much has been written as to salt-free diet that it suffices merely to subscribe to its value, with the qualification that there has been a tendency to overrate its importance, to generalize too broadly, and to overlook the fact that, as the minimum of water is 2,500 c. c. a day, requiring 15 grams of salts to approximate the physiologic strength and as the saline content of unsalted foods is inadequate, 5 or 6 grams of NaCl are usually required.

With regard to the reduction of water in dropsy and obesity it should be remembered that, in the former case, the dropsy is never the condition of prime importance and that, if the system does not readily take up the effusion, it must be supplied with water to expedite elimination of waste, while in the latter, the rapid reduction of weight produced for the first few days is adventitious and misleading and

that, to produce any genuine and permanent reduction of fat, an abundance of water is necessary to expedite metabolic processes.

Miscellaneous Adaptations of Food Adjuvants and Adventitious Ingredients of Food Stuffs to Therapeutics.

Most spices are or have been official drugs. While not of great value, they are not to be ignored and, when indicated, they may usually be included in the diet, thereby facilitating the administration of nourishment. Chamomile and catnip tea, etc., may be used not only in accordance with old fashioned methods of therapeutics, but as substitutes for tea and coffee when the latter are contraindicated.

Caffeine has well established therapeutic uses and while, unfortunately, one is rather apt to find that the patient is already in a state of overdosage, there are many instances, including opium poisoning, cardiac failure, etc., in which coffee may be used as a beverage with quite as marked therapeutic value as infusion of digitalis. Tea, from its excess of tannin, is a valuable astringent, in addition to the effect of theine which is, practically, if not chemically a duplicate of caffeine.

Theobromine seems to be more specifically diuretic than caffeine. Chocolate and cocoa also lend themselves better to the introduction of nutriment in the form of milk, sugar, etc., than do tea or coffee. Sweet chocolate includes nutriment and stimulant in portable and usually palatable form.

Tobacco, though usually thought of as a depressant poison and the material expression of a vice, is a valuable sedative. In many conditions of disease even those habituated become averse to it. On the other hand, it is often interdicted or its interdiction taken for granted, and the patient suffers from sleeplessness, restlessness and excess of temperature from the deprivation.

The therapeutic use of alcohol has been discussed from various standpoints. Without entering into the controversy, it may be said that most authorities concede that about 30 grams may be fully oxidized in 24 hours and that it stimulates gastric digestion up to the point at which it forms about 3 per cent of the stomach contents. When used, it should usually be employed dietetically both in the sense that a choice should be made, according to circumstances, from the wide range of alcoholic beverages, calculating the dose and endogastric strength, and in the sense that it should usually be administered in connection with food.

The hyoscyamine of lettuce, asparagin, lupulin and lupulinic acid of hops, the hydrocyanic acid of bitter almonds, the anthelmintic principle of pumpkin seeds and the bitter and astringent principles of a large variety of herbs, may be mentioned as representative of the

medicinal virtues of quite a number of plants more or less commonly used as foods, though not possessed of marked nutritive qualities.

Cellulose, sugar and salines give laxative effects to many food stuffs. So, too, butter, cream and salad oils may be used with the same end. But, contrary to the general tenor of this paper, the writer would warn against catharsis produced by the mechanic irritation of seeds, skins, cores, etc., gaseous distension due to bacterial destruction of cellulose or fermentation of sugar, etc., and the stimulation of peristalsis by undigested oils or the soaps formed from them. Nor should the bowels be kept open by an excess of water. It is much better to use purpetrol (pure mineral oil) as a lubricant, cascara and other mild drugs.

Dietetic Contraindications.

The negative aspect of dietetics is quite as important as the positive. In the present connection, allusion is not intended to the grosser forms of dietetic error. For instance, in nephritis, it would be foolish to give eggs in the raw state, as the foreign albumin is liable to filter readily through the kidneys. No actual harm may result but, while the amount of albuminuria may have no very direct bearing on the seriousness of the case, it is well to eliminate extraneous factors as far as possible since the disappearance of albuminuria, in the absence of signs of acute renal failure, is a prognostic omen of value. In this connection, it may be asked why eggs should be given raw in any case.

It is often advised to give raw or practically raw meat in convalescence from various diseases and in chronic states of invalidism, but here, we have a predisposition to tuberculosis and, especially if beef is used, there is some real danger of implanting bacilli of the bovine type. Pork should always be given well cooked, on account of the danger of trichinosis and the cysticercal stage of various cestodes may be present in various raw meats and fishes. Of the common meats, mutton is least likely to be infected either with pathogenic bacteria or gross animal parasites.

The clinical picture of typhoid is largely due to intestinal saprophytosis from the cultivation of particular strains of bacteria by a prolonged meat juice and milk diet. With the addition of soft cereals, the disease is mitigated and shortened.

Ergotism, lathyrism, and perhaps pellagra and beri beri, call for the exclusion of corresponding cereals.

Various erythematous and other lesions are due to idiosyncrasies against particular food stuffs, varying for different individuals.

Diarrhoea, vomiting, etc., may be due to minute amounts of food stuffs distasteful only to certain individuals, even when not present in

sufficient amount to lead to the rejection of the dish. Onions, turnip, beer, etc., may be mentioned in this category. During camp practice, the writer noticed that 5 or 6 of a hundred boys would usually be sick after serving lemon ice cream, while other flavors did not produce bad results.

Distilled water drunk in large quantities is not only directly irritant to the gastric mucosa but the tendency to osmotic equilibrium may theoretically produce a draft on distant cells. Without a well considered explanation, the writer prophesied diabetes for a physician who ate his meals dry and drank a couple of quarts of distilled water midway between meals. This gentleman actually did develop diabetes a year or two later of such severity that, in one day, he passed a pound of sugar, on a moderate carbohydrate ration. Fortunately, the case yielded to treatment so that for the last three years the general health has remained good.

Without special preference to the nutritive ingredients, it is obvious that in disturbances of gastric motility, dilatation, ptosis and contracted or relaxed states of the pylorus, and to a less degree in analogous conditions of the oesophagus and intestine, not to mention surgical abdominal conditions, before and after operation, the bulk, weight, potential gas-forming properties, of the ingesta and the time and spacing of meals, are of prime therapeutic importance.

354 Franklin Street.

THE CONSTANT OR GALVANIC CURRENT IN GENERAL OFFICE PRACTICE.

BY G. BETTON MASSEY, M. D., PHILADELPHIA, PA.

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The modern development of electro-therapeutics has been in the direction of skilled specialism in particular lines of work. It is unlikely that any one practitioner can today be equally skilled in the several fields of scientific art comprised in the use of the galvanic current in gynecology and nervous disease, ionic and electro-chemical surgery, Roentgenology, high-frequency applications, and static electricity, even though each of these lines of work are based on the laws of electric energy.

Yet, the results of the labors of these several specialists have made it easier for the general office practitioner to do better work than heretofore with each and all of these modalities of energy. The difficulty with the beginner is often referable to an unformed point of

view as to the indications for the several modalities. He wishes to know what apparatus will best meet his needs as a first purchase.

The Essentials of Electrical Equipment.

If his purpose is to cover what may be called both the medical and surgical indications of electro-therapeutics in even a modest way, it is essential that he have either a static machine or high-frequency apparatus as well as a reliable constant current apparatus.

There is no doubt that the strictly medical uses of electricity are more adequately and conveniently covered by a static machine than by the constant current. This is the conclusion of one who has used both for thirty years.

Yet those practitioners who confine themselves to this form of electricity alone (not as teachers, to whose undivided attention we owe so much, but as general practitioners), these mere static electricity practitioners are guilty of a scientific obtuseness and narrowness that is closely akin to charlatanism. To pretend to use electricity intelligently and in the best interests of their patients while failing to employ the constant current in many gynecological affections, genito-urinary disorders, hemorrhoids, surgical tuberculosis, and accessible malignant tumors, mentioning only those affections that occur to the writer at the moment, is to be practically guilty of quackery.

It is impossible for the writer to enter into the special indications and the technic for the constant current in these affections in a single paper. Those for gynecologic affections alone he has given in a work of several hundred pages, now in its sixth edition, while a volume has recently been published on the ionic treatment of cancer.

It may be of service, nevertheless, to allude specially to the advantages and simplicity of minor ionic surgery to the general office practitioner.

The Outfit for Ionic Work.

Minor ionic surgery, *i. e.*, the diffusion of ions from solid needles, requires only the simplest galvanic, or constant current outfit. Merely a proper controller and meter, if a direct current incandescent service is obtainable, costing at most about fifty dollars, to which should be added about 30 dry cells if the current mains are not available. Such an outfit will answer the purpose of gynecology and general work also.

With such an outfit, together with some fine wire (No 32 Brown and Sharpe gauge), to attach to size needles cut from ordinary thin sheet zinc with a pair of tinners pliers (the wire being attached to the butt of the needle by wrapping it about the latter and clamping the end of the needle over it); and a little quicksilver to dip the point of

the needle in after dipping it in weak sulphuric acid, we have an apparatus that enables us to sterilize by zinc-mercury ionization many incipient epitheliomas in various parts of the body. The result may be accomplished either in one application of a half hour duration, or only after many repetitions. If this be so, how unscientific to leave these cases to produce metastasis by delay!

Allusion is not made to the major ionic application, for which technical skill is needed, but to the smaller external growths which are often successfully treated by a prolonged series of X-ray applications. How much better to use this simple agency, with results attainable at times in a few minutes! In large, flat epitheliomas of the skin, penetrating but slightly below the surface, the rays will continue to be the best remedy.

Small growths within the mouth are often equally amenable to minor ionization applications. Here the X-ray is powerless, as it is also in rectal growths. In these latter a major ionic application is necessary.

In hemorrhoids a similar minor ionization technic will be successful in 15-minute applications, repeated from two to six times at intervals of five days. The technic here requires that all of the needle except about a fourth of an inch from the tip shall be insulated by coating it with fused sealing wax. This is readily done by bringing the needle and wax in contact over an alcohol flame. Simple zinc ions, that is, ions from a zinc point uncoated with mercury, are all that is necessary to produce an occlusive plastic action in hemorrhoidal tumors.

By a nearly similar technic, we may cure tubercular glands in the neck and tubercular sinuses, the number of applications needed in each varying from six to twenty-two. Here the mercury ions are a valuable addition to the zinc, dissolved from a blunt sliver of zinc coated with quicksilver and inserted into the open sinus. When the gland has not broken down and the skin above it is unaffected, an opening should be made for the electrode, under the local application of cocaine. The duration of these applications in non-malignant conditions should be fifteen minutes; in malignant growths not less than double this time.

1801 Chestnut Street.

**"Things alter for the worse
spontaneously, if they are not al-
tered for the better designedly."**

* * *

**He hath but little who, having
plenty, hath not yet enough.—
Dobbins.**

THE FORUM

As promised in our last number here is the new department. It is to be hoped that **THE FORUM** may prove as interesting to our readers, as it will be instructive to them. Here subjects of live interest will be discussed by a number of men known to have more than a passing knowledge of the subject. Any reader is welcome to join and to make this department of exceptional value.

The subject under discussion this month has for some time been quite a mooted point. From the following statements it must be deduced that the static machine has a certain therapeutic efficiency which cannot be obtained by any other form of apparatus; that for all-round work in the office the coil is a good investment and that those who desire to do purely radio-diagnostic work of the highest character, should look to the interrupterless generator.

Evidently the static machine is far from obsolete as some would have us believe. It has several points of excellence and the two main inconveniences—its relation to varying atmospheric conditions and its size—can be overcome by care and plenty of office space.

In the March issue the subject for discussion here will be:

Physical vs. Pharmacal Remedies in Hypertension.

This is a very pertinent subject and one which embodies possibilities of much interesting and helpful discussion. Our readers are requested to send in their opinions as early as possible—not later than the 10th of February. Please also remember to be as brief, pithy and convincing in your remarks as possible.

STATIC, COIL OR GENERATOR?

Dr. Sinclair Tousey, 140 W. 59th St., New York City:—Since you have expressly asked for my opinion as to the relative merits of static, coil or generator, I must not be considered egotistic if I give my own views even though they may not agree with those of others whose opinions are much more valuable.

My ideal of an X-ray exciter is an apparatus producing a constant high potential at the terminals of the X-ray tube. The current would thus be unidirectional and non-pulsatory. There would be a continuous production of X-ray instead of a series of flashes of very short duration as compared with the intervals between them. There might well be a close approach to radiation of one wave length with a given degree of vacuum. At least one electrical engineer is working on such an apparatus as was suggested in the author's book (*Tousey, Medical Electricity and Röntgen Rays*, page 661).

Meanwhile I am using a 12-inch induction coil with a Wehnelt in-

terrupter and a direct 110 volt electric lighting current. The coil has the great advantage of small cost and size and a power which is ample for every class of work except that of extremely rapid radiography.

There are static machines which are ample for all practical purposes.

The various transformers with high tension rectifiers made under Lemp's patent are doubtless the best X-ray exciters at the present moment. They are expensive and yield a pulsatory current of uneven voltage at the terminals of the tube instead of the continuous current of constant voltage which I hope to see realized.

Dr. J. N. Scott, Kansas City, Mo.:—The choice of apparatus for a physician who wishes to treat with the X-ray and take X-ray pictures depends upon his requirements. For taking X-ray pictures there is no doubt that a coil of from twelve to fifteen-inch spark length and wound to give a heavy discharge in the secondary, also with a very heavy winding in the primary, or several wires wound so they can be connected in multiple, is preferable. It should be capable of carrying from fifty to seventy-five amperes of current through the primary when used with the electrolytic interrupter having from two to five points. Such an instrument will meet the requirements for radiographing any part of the body in from one to ten seconds. The chest and thinner portions can be made by a flash of about half a second. Besides the saving of time an instrument of this description will take pictures showing detail which cannot be obtained by the slower methods.

For therapeutic work this instrument should have the primary wound so it can be thrown in a series of four layers or a multiple series of two layers, and used off a vibrating interrupter, mercury interrupter or other mechanical form. This same instrument can be used to operate high frequency apparatus, but it will not take the place of a static machine. The currents from the induction coil and high frequency apparatus connected to it, have therapeutic effects of their own, and will not produce the therapeutic currents obtained from a static machine, although many of our manufacturers would lead us to believe that they will.

For the physician who only cares to use an apparatus occasionally in the examination of fractures, etc., and desires to use static electricity in his practice, and does not care to expend sufficient money to buy both coil and static machine, he will be able to do a great deal of work with the static machine, and it will answer his purpose very well, but he cannot obtain the detail in X-ray pictures that would be obtained by a good coil unless he has a very large static machine, consisting of about forty-eight plates, and for the amount of money that this machine would cost, he could buy a static machine which would serve all purposes for treating with static electricity and a coil besides. The static machine is inferior to a coil for obtaining the therapeutic effect of the X-ray, because its output varies from hour to hour and he cannot control the dosage to as fine a degree as he can with a coil.

One cannot obtain the effects of high frequency apparatus from the static machine direct, but a high frequency apparatus can be operated from the static machine and will produce the same effects

as if a coil were used for the source of current. However, the power and volume of the high frequency current will not be as much from the average size machine of from twelve to twenty-four plates, as will be obtained from a good twelve-inch coil. Each apparatus has its place. No coil will do the work of a static machine, neither will any static machine do the work of a coil.

If a physician only expects to buy one instrument, the one which he will use the most and derive the most benefit from will depend upon his work. If he is a general practitioner in a small place he would probably do more work with the static machine, but if he was in a city and expected to be able to do general X-ray work and do it well, he should have the coil.

As to the merits of the interrupterless coil, I have not used this instrument personally, but have observed the results obtained from it, and do not believe it offers any advantages over a good induction coil. In my office I use a sixteen-plate Van Houten & Ten Broeck static machine, and a sixteen-inch Scheidel Western Radiographic Special Coil with electrolytic and vibrating interrupter. At the hospital I use a twenty-four plate Nelson static machine and an eighteen-inch Scheidel coil.

Dr. P. S. O'Donnell, 42 Madison St., Chicago:—My argument in the X-ray field regarding the controversies (coil, static machine, or interrupterless transformer) is decidedly in favor of the latter.

Unfortunately the high ideal potential current for exciting X-ray tubes is delivered by the static machine, but that apparatus is so unreliable, and by some rule of fate breaks down very often in time of emergency, that it is ruled out of the practical laboratory, and left in the hands of the one who depends upon psychic effect and fireworks.

The 4 K. W. machine, built for me by the Scheidel-Western Company, delivers a true unidirectional current without inverse, and I think it is superior to many similar machines now being manufactured.

The German and French operators of recent years have developed a mania for speed, followed by the English and Americans, each claiming a fraction of a second in exposure less than the other. To my mind the speed enthusiast is about as much use as the speeding automobilist.

I have yet to have demonstrated to me, that in the everyday routine, in the emaciated and obese, pathological and non-pathological, in pelvis and abdominal cases uniform results in skiagraphy can be obtained by flashing the tube.

I once had the speed mania myself, especially while doing work in Germany and France, and although with the interrupterless machine I have I am able to do any and all radiography in practically instantaneous time, I have discontinued it, for I find the beauty of definition, and value of the radiograph for diagnostic purposes depends entirely upon medium time exposure, not forgetting the condition of the patient or tube.

Dr. H. O. Wells, Fort Wayne, Ind.:—From a therapeutic standpoint I do not believe there is any difference in a ray derived from a coil and one derived from a static machine. My first successes were derived from the use of the static machine, but the only thing I now

use it for is in giving the Morton wave current, for the reason that the coil is so much more easily used and the current can be so perfectly controlled. My greatest objection to the coil is the expense in keeping it in perfect running order. My first coil was a Scheidel. When I was using it for high frequency and X-ray work the expense of platinum points, aluminum plates, etc., for the electrolytic interruptor sometimes ran as high as ten dollars a month. I now use a "Special" Scheidel-Western coil with a four-jar rectifier which is very satisfactory with an up-keep expense of about two dollars a month. The electrolytic interruptor has been quite satisfactory, but the mercury interruptor has not. I would unhesitatingly say that I very much prefer the coil for X-ray purposes and think I can get better results with it because I can quickly adjust the current to suit the tube required to treat any given case.

Dr. Anthony Bassler, 126 East 60th St., New York City:—In a ten years' course of X-ray work, from the twelve-plate static, through the twelve-inch coil, to the Waite & Bartlett "Solace" transformer, I have reduced the time of making good plates of the abdominal organs from three minutes to three seconds, and make plates today which in diagnostic value were not possible before this. With this later form of generator, the detail points, such as, peristaltic waves, slight irregularities in the contour of the hollow viscera of the abdomen, etc., can be noted, and in this is the present day great value of X-ray work in the diagnosis of affections of the abdominal organs. Personally, I fail to see how the best quality of gastro-enterological work can be done by anyone without the elucidating help of fluoroscopic and plate work, for it is necessary for my associates and myself to depend upon it in most of the cases that come to me.

Dr. W. H. Mick, 430 Brandeis Bldg., Omaha, Neb.:—In regard to the selection of a static machine, coil or generator, I prefer to give you as briefly as possible my experience and allow the reader to draw his own conclusions. At the present time I am using in my laboratory one Birtman, twelve rotating and twelve stationary plate static machine; one Ovington high frequency coil, and two sixteen-inch Scheidel coils. For therapeutic X-ray work I can get as good results from one as I do from the other. The high frequency coil is, in my opinion, the best for high frequency work. The static machine with a stepup transformer comes next for high frequency work and the coil next. The high frequency transformer requires less care to keep in working order than either of the others. For radiographic work, the X-ray coil is, in my opinion, far superior to the other apparatus. A good static machine built large enough to produce current enough gives an ideal current for skiagraphic work. The plates are very clear. The static machine requires more care to keep it in working order than any other type of machine. It must be kept dry in order to keep it working. It must also have a change of air occasionally. I keep a hygrometer in the machine and one on the outside. Whenever the air is dryer on the outside of the machine than it is within, the case is opened and the machine is allowed to air. As a drying agent I use fused calcium chloride. When the output of the static machine is low, I reshellac the plates. The graphite bearings have never given me any trouble, and

only once have I centrifused any plates. This is my second static machine, and I could not do without it for therapeutic work nor would I do without a good induction coil for radiographic work.

The X-ray coil requires some care although not nearly as much as the static machine. The work should be done preferably with a direct current. The alternating current can be used successfully with a Wehnelt interrupter, but the direct current is decidedly better. The chemical rectifier for changing an alternating current to a direct one requires a great deal of care by renewing solutions and keeping the iron aluminum plates cleaned. The motor generator requires little care and is as satisfactory as the direct current. The mercury interrupter is ideal for therapeutic work and good for fluoroscopic work. It will not work, however, unless used on a direct current.

The Wehnelt interrupter requires a change of solution once or twice a year. All that is required is to empty the solution, put in new sulphuric acid and water and occasionally adjust your platinum point.

At one time I used a Wehnelt interrupter for therapeutic and radiographic work; however, I had to use two of them, and when the solutions in one would get hot, I would use the other. This was not very satisfactory, but one doing comparatively little work would not have this to contend with. The mercury interrupter will work all day long without inconvenience. The only other difficulties with the coil that might come up are break-downs in the primary or secondary. The principal difficulty with the static machine is keeping it dry and aired. I know of one static machine kept in a sunny bay-window that worked for five years without a dryer in the machine or being re-shellaced.

As far as X-ray treatments are concerned, the static machine fills the bill. It has certain fields of usefulness for which nothing else will take its place. For instance, if an operator once uses the static wave in conjunction with the X-ray, for exophthalmic goiter, I am satisfied that that will be his routine treatment. If you are looking for a radiographic machine, and can afford to take the time to become proficient in skiagraphy, I would select a coil or Snook generator. If you are looking for a therapeutic machine, one that will not take the time required to care for a static machine that will be ready for work at any time and still good, that is, fairly good, for light fluoroscopic work I would then suggest a high frequency coil. If you are contemplating making this work a specialty, you will find use for them all.

Dr. Noble M. Eberhart, 72 Madison St., Chicago:—In reply to your request for my opinion as to the comparative merits of the coil and the static machine for X-ray work would say that this seems to be a matter in which opinions are largely influenced according to the early experiences of the operator, that is, whether he started in working with a coil or a static machine and by reason of greater familiarity with one or the other he naturally is inclined to believe it the preferable machine.

I have always believed that the coil was superior to the static machine because it was not influenced by weather conditions and because of the greater power that it possessed. At the same time, it was admitted that the static machine could be used where no electric

light plant existed, and was valuable for other purposes than simply the generation of the X-ray.

Now, however, as I have given expression in a recent printed statement, I believe that the era of the static machine is passing, because the advent of high frequency apparatus has largely usurped the field of general treatment covered by the static machine; coils have been simplified, and electric light plants have become so numerous that there is scarcely any necessity for machinery that does not require the convenience of the electric light plug.

Dr. Wm. Benham Snow, 329 West 57th St., New York City:—The subject on which you have chosen to invite a controversy is one in which there should be no controversy. If you had made the title "static, coil, *and* generator," it would have implied different means to different ends in therapeutics and radiography. It is a question upon which no controversy should be raised. One who is narrow and unfamiliar with the advantages of each in the particular kinds of therapeutic application to which it is adapted is not capable of determining *which*.

It is a subject upon which there should be no partisanship whatever, though manufacturers would often have it so. No man can do therapeutic work of the highest order without a static machine.

There is a class of work also which the coil fills equally well and sometimes better than a static machine, depending upon the size and capacity of the static machine. For rapid radiography there is no question that the preference should be given to the coil and interrupterless transformer.

I would repeat that it is not a question of which, but a question of what the physician intends to do with the apparatus. Numerous writers seem willing today to take a stand against the static machine. They, however, cannot be familiar with the advantages it possesses in treating many difficult inflammatory conditions. No apparatus requires greater skill in technique of application to obtain these results than the static machine; but the man who ignores its use, or fails to become familiar with its methods of employment, often neglects the best interests of his patient.

Dr. M. W. Yencer, Richmond, Ind.:—I have used the static machine for nearly ten years. The first machine used was of the Morton-Wimshurst-Holtz type. One year ago I installed a 32-plate Toeppler-Holtz machine, manufactured by Anderson, Norden & Co. of Chicago. I use the two machines with the very best results. I believe that the static machine has as great and as wide a therapeutic range as any therapeutic agent yet known. When Monell in his book on Static Electricity stated that it takes from three to seven years to learn how to run the static machine he is surely correct. The secret of the failure of some to realize the true value of the static machine is that they have not yet learned how to use it properly.

If the profession should use some midnight oil in studying and working out problems in the use of the static machine they would be increasing their value to the world and would be able to do more for humanity than ever before. I have obtained results that were posi-

tively marvelous. I still get them. I believe that the static machine is KING.

Dr. J. C. Walton, Richmond, Va.:—It affords me pleasure to present to your readers my experience as to the relative merits of the static machine and the coil.

A good static machine will do everything that a coil will do; will do it better and it will also do a great many things that a coil will not do, for instance, the wave current, sparks, thermo-penetration, oscillatory dessication, etc.

Dr. William James Morton taught me that while high frequency could be obtained either from a coil or from a large static machine, that he was of the opinion that the high frequency obtained from a large static machine was of a superior quality to that obtained from a coil, this I have verified to my own satisfaction.

After a large and varied experience with a number of different makes of static machines and coils, and after many tribulations and great expense, I have finally settled down upon a twelve-plate "Baker" high-speed machine as the best thing in sight. For auto-condensation it has a current range from 200 to 800 ma., and it does as good X-ray work as the coil. It is good enough for me.

Dr. Arthur W. Yale, 1524 Chestnut St., Philadelphia, Pa.:—The pioneers in physico-therapy in the East all seem to prefer a static machine to a coil for therapeutic work, even for X-ray therapy. As these men have had a wide experience both in the years in which they have used high potential currents, and the number and range of cases treated, it is well to follow their counsel.

In a machine of the Toeppler-Holtz-Wimshurst type, the initial current with which the static plates are charged is of a higher voltage than that of the self-starting machines. The current generated is of a higher voltage than any current produced by a coil, and for X-ray there is no inverse.

A deeper penetration is produced by high frequency currents generated by a static machine than from a coil, on account of the higher voltage and the higher rate of interruptions. The writer sincerely questions whether a high frequency current can be produced from a coil using a mechanical interrupter.

The quantity of ozone generated from a static current is greater by far than from the same milliamperage of current produced by a coil; and the most useful modality of all, *i. e.*, the Morton wave, cannot be produced by a coil.

There are also other modalities impossible with a coil, such as the static spark, the blue pencil point discharge, etc.

Therefore when a physician is contemplating the acquisition of but one form of apparatus, there is none which can equal a static machine both in range of usefulness, and therapeutic results. It might not be amiss for the writer to state that he used the western type of static machine for three years, and for the last two years has been employing two VanHouten and TenBroeck machines, and has also in his office three coils of different types, with electrolytic and mechanical interrupters.

Dr. Herbert McIntosh, 419 Boylston St., Boston, Mass.:—I have in my office three types of apparatus for the generation of high tension currents, viz.: The static machine, the high frequency coil, and the induction coil. The static machine I use for treatment purposes alone. Formerly I used it also for exciting X-ray tubes, but on account of the time required for exposure have abandoned it for that purpose. The static machine furnishes a current which is ideal for X-ray purposes in that it is unidirectional and consequently free from inverse discharges, but unless the machine is very large it will not be satisfactory for this type of work.

My high frequency coil I use for treatment purposes entirely. It is not a good machine for radiographic work, though I find it excellent for X-ray treatment where a low tube is generally required, and use it for all cases requiring exposure to the X-ray for therapeutic purposes.

For diagnostic purposes I use a Meyerowitz coil with meters in both the primary and tube circuits. This is used for no other purpose. I find it very satisfactory. I use a Wagner static machine and a Jackson high frequency apparatus.

Dr. Frederick DeKraft, New York City:—The type of static machine which has reached its highest point of excellence, durability and reliability today is the Holtz type. These machines can now be had in any size from 8 plates to 30 plates, in revolving glass plate or high speed plate form. Their durability is such that it may be asserted that such a machine will outlast the life of any worker in this field. A 16 plate machine in the writer's laboratory has been in daily use for the last five years without other attention than the replacement of one belt and one new set of brushes in the motor. If a sufficient amount of unslacked lime (about one-half barrel) is kept in such a machine, it will only be necessary to change the lime once in six months. If such a machine is kept in a good sized room to which the sun has access a portion of the day, it will always be ready to work by day and by night. One of the writer's machines has lost its charge but once in five years.

A static machine has a very wide field of usefulness in general practice. The brush discharge from a wooden stick electrode is similar in action to the resonator spray from coil or step-up-transformer, has a wide range of adaptability. A recent sprain of an ankle joint can most certainly be relieved of pain and swelling in three or four treatments. We instance the following case: Dr. B. B., age 23, had stepped out of an automobile on July 4, 1910; sprained his ankle so badly that a physician who saw him in my office on July 7, said it looked like a fracture, but was convinced it was a sprain. July 6, Dr. B. B. came in suffering great pain; the skin was black and blue over the right ankle and the tissues so badly swollen that it was impossible to put on a stocking or shoe. We started our machine slowly, the patient holding the shepherd's crook attached to the negative pole, positive grounded. With the grounded wooden stick electrode, we applied first the sputtering brush discharge all over the bare skin, gradually speeding up the machine until we reached the gentle and soothing blue pencil flame, moved this lightly up and down over the

swollen joint. At the end of a half hour's treatment, the machine was stopped. The pain had left the foot, the swelling was much reduced, also the discoloration, and our patient walked unassisted out to his automobile; five such applications banished every trace of this trouble. No such startling results are possible from a resonator effleuve from coil or step-up-transformer source. Much more could be said of the brush discharge, but this must suffice for the present. Most of the therapeutic value of static currents are due to the peculiar property of a static charge to adhere to the surface of charged bodies. •

The manner in which this accumulated charge is discharged governs its effect on the tissues. Among its very oldest uses is the application of sparks. At the moment a spark strikes the patient, there occurs a commotion in the part struck, this is transmitted to every portion of our patient's body, as is shown by the oscillations of the upstanding hair on the head. This spark has a very wide action. If, instead of allowing the spark to strike our patient directly and thus empty the accumulated charge, we allow the spark to pass at the sliding rods, we have the wave current. A succession of charges and discharges: This action can be made so rhythmical, so quieting to mind and body as probably no other form of current.

Its action in relieving inflamed and indurated tissues is certain if proper attention is paid to current density, or as our friend Dr. Snow would say: "The potential of delivery." No coil or step-up-transformer can give any such effects, even approximately, in the equality, physical and physiological effects of the wave current. The X-ray from a static machine is extremely valuable because there is no inverse, because the life of X-ray tubes worked by a static machine is very long.

The newer forms of high speed static machines give a current of greater amperage and voltage. These machines are virtually high voltage dynamos or transformers and are capable of giving very powerful X-ray effects.

Five to eight milliamperes are easily passed through a medium high X-ray tube with a high speed Toepler-Holtz machine of twelve revolving plates.

The absence of inverse and more constant working of the tube make it possible to obtain an X-ray of high quality.

Again, a static machine can be attached to a resonator and can do all the work which a coil can in high frequency currents.

The D'Arsonval current obtained by means of Leyden jars of proper size and small spiral is in no way inferior, when a large static machine of suitable amperage is employed, to that obtained from other charging sources. Remarkable work in fulguration has been done with such machines.

Truth is tough. It will not break, like a bubble, at a touch; nay, you may kick it about all day, like a football, and it will be round and full at evening.—Oliver Wendell Holmes.

NOTEWORTHY EDITORIALS.**SERUM THERAPY AND THE OPSONIC INDEX.**

There seems to be a pretty general feeling among the medical profession, which finds utterance in an editorial of one of our contemporaries, that "in the application of the principles of the opsonic theory we have the open sesame to the successful treatment of all germ diseases" and that the work of the future will be largely devoted to the promotion of the use of biologic therapeutics in the form of vaccines and serums in various combinations.

With the foremost of these two propositions we are in hearty accord. We thoroughly believe that the principle of the opsonic theory touches bottom, so far as the infectious diseases are concerned—possibly in respect of all diseases. But the second proposition does not by any means necessarily follow the first in the relation of a *post hoc propter hoc*. The principle of the opsonic theory is a great deal profounder than the applications which have thus far been made of it; and an intelligent belief in the principle of serum and vaccine therapy does not necessitate, as some of its advocates seem to think, a blind faith in the efficacy of any or all of the serums and vaccines that have been constructed upon the principle. Indeed, it does not necessarily imply an unquestioning acceptance of the direction in which the application of the principle is being worked out. The acceptance of a premise does not necessarily involve an agreement with all the conclusions that are derived from it, or even with the lines of argument that are drawn away from it. One may therefore subscribe heartily to the principle of the opsonic theory and yet, without being a heretic, preserve an open mind as to the soundness of the current modes of therapy which are being based upon it.

The fact is, the opsonic theory is in reality nothing but a working formula. The opson in itself is a hypothetical element, just as the concept of luminous ether is in the cosmogony of the physicist; and the opsonic index a symbolic formula, similar to that with which the algebraist works, with which, to be sure, equations can be reliably balanced, but containing always the inscrutable x , to which as yet no qualitative value has been assigned. It will be remembered that Newton's famous formula for the determination of the velocity of sound in gases and fluids, while in principle it was mathematically exact, did not give results in conformity with experiment until Laplace, in applying the formula, took into account the thermic effects produced by the rarefaction and condensation of the medium. We have not, as yet, even ascertained whether there are any such experimental corrections to be applied to the opsonic index, to say nothing of what they may be.

Speaking less technically, and more in the language of the forum, one may accept the dictum of the opsonic theory as to the defensive function of the opsonins, and may even assent to the accuracy of the formula representing their reaction to stimuli, and may yet be in grave doubt as to the proper method of imitating the stimuli.—Editorial in the *Medical Standard*, Sept., 1910.

A KERNEL OF TRUTH.

The physician of broad training is fitted to pass judgment upon things medical far more intelligently than the layman. He is bound by neither restrictions nor narrow dwarfing dogmas, but is permitted to use any agency in the fight against disease which to his mind is justifiable. Every sect of the art of healing from the foundation of homeopathy down to the present time has been builded upon very narrow lines, and yet each has contained its modicum of truth. The weakness of each lies in the fallacy of applying a set rule to every case. No matter how absurd the creed if the founder of it is sufficiently carried away with the theme a large number of followers can be found who will rally to his support, fight for him and die in the belief that they have been defending a principle, which if generally accepted would have wrought universal good to mankind.

As medical men seeking for knowledge we do not ignore the good that is pointed out to us by the various cranks. The good is in most instances so obscured by absurd claims, erroneous reasoning and fallacious observations, that it is at first hard to find. It seems incredible that, in many instances, men who have occupied high positions in the esteem of the public, could be carried away by such unscientific and apparently foolish claims, and yet such is the case. It is fortunate that it is so, otherwise the cause would find an early grave and the little good contained in the principle advocated by the new cult would not come to light. After the light of reason has extracted the vital spark from the folds of mysticism which has enveloped it the cult gradually loses caste in the public estimation and becomes an agency of the past. It lived long enough, however, to add one more star to the firmament of medical knowledge. No matter how obscure and ignorant and unbalanced the founder of a new idea may be, yet if he really has given us something to think about, we should not be too proud to investigate it and to accept it and use it if it is really of value. The medical profession is the censor to which the sane level headed public look for guidance in such matters. We must not betray the trust by condemnation without due investigation and we should be slow in arriving at hasty conclusions. There will be plenty of victims ready to sacrifice themselves at the shrine of the new "cure all," and for a time all we need to do is to utilize this clinical evidence. It should be weighed by us from an unprejudiced standpoint and such deductions drawn as time and experience warrant. Our views should then be given fearlessly.

The new cults should not be looked upon by the medical profession as rivals nor treated as such. If this attitude is taken we soon would be regarded by the public as narrow, biased critics. The public is not a fool. Far from it, and to command its respect we should take the broadest view of all things medical, and give it the benefit of using intelligently the knowledge we have acquired.

"Nothing useless is, or low;
Each thing in its place is best;
And what seems but idle show
Strengthens and supports the rest."

—Editorial in *Colorado Medicine*, Dec., 1910.

THE RECTAL TUBE.

The question has been raised in medical journal literature recently as to whether the familiar colon tube can be made to enter the colon when it is desired to lavage that important storehouse of the viscera. Those who have experimented upon the cadaver give it as their opinion that it is well-nigh impossible to introduce the tube into the colon. We are not prepared to give a personal opinion on this matter, one that is positive and authoritative, yet we are quite sure that the thing is not easy to accomplish. Before the descending colon becomes the rectum we come in contact with a narrow and twisted section of gut known as the sigmoid flexure. On account of the narrow lumen of this portion as well as the almost double curve that it describes, it naturally follows that the passing of a tube through it would be a very difficult matter. The doubling of the colon tube on itself is always illusive.

We believe that for ordinary irrigation the common rectal tube is about all that can be desired. The value of high rectal enemas is often overlooked. This instrument should always be in the emergency bag. The reflex stimulation that results from the throwing of a stream of water in the region of the sigmoid creates increased peristaltic action of both the large and small intestines. Scybala and small particles of fecal matter often become lodged in the angles of the bowels and are not routed out even by drastic cathartics. While treating a young girl with typhoid fever a year or so ago there was a persistent hyperpyrexia that did not seem compatible with a favorable prognosis. Antipyretic remedies afforded only a modicum of temporary relief, and thorough elimination with calomel, salines and castor oil did not exert a salutary effect in bringing down the high fever. While there was no apparently marked indication for so doing, we gave two or three high enemas which brought away some inspissated feces which had formed foci for reabsorption for no telling how long. After this the fever came down promptly and the termination of the case was uneventful.

In nearly all acute diseases that prostrate the patient for some days the occasional employment of the rectal tube can only give good results. In anemia and semi-invalid states in which there is a lowered peristalsis and defective elimination with a consequent autotoxemia, a high enema once or twice a week is conducive to a betterment of the individual's condition. Rectal irrigation should not, however, be overdone. Too frequent use causes a relaxation of the rectal mucosa and may cause the muscular coats of the bowels to lose their tone, thus tending toward a lowered peristalsis. In pathologic states or conditions bordering thereon it is sometimes an expedite method of bringing about a restoration to normal. For children a large size soft rubber catheter may be used and its free employment will mitigate the majority of acute disorders of childhood while systemic remedies are having time to act during the interim.—Editorial in *The Medical Summary*.

STANDARDIZING PHYSICAL THERAPY.

It is a well recognized and regretfully conceded fact that the various methods of modern drugless therapy, of which electro and radio therapy are the chief representatives, have hitherto been greatly discredited with the profession in general, and their real benefits greatly hindered from having their perfect work, by the undue enthusiasm, amounting often to infatuation, of certain of their over-zealous advocates. So much has been claimed for them, and in such a universal range of application, that conservative men in the profession have been skeptical, or at least wary, in accepting them at their true value.

This state of affairs is, happily, fast resolving itself. The modes of treatment in question are rapidly getting into safe and judicious hands, and there is every indication that they will not much longer suffer from the excesses of their misguided friends. There still remains, however, as we are inclined to think, another and perhaps more serious factor in the hindrance of the full utilization of these agencies of physical therapy—more serious in that it has no inherent tendency to right itself, and in that it offers a real and practical obstacle to the acceptance of the scientific practitioner. We refer to the lack of standardization of these methods.

Without a certain degree of standardization no mode of therapy is of practical value. Drugs would not be generally available in the treatment of disease except for the uniformity of indication, dosage, effect, etc., that has been established concerning them. And the more definite the standardization, the more generally available they become. Thus far there has been practically no standardization made of electrotherapy, radiotherapy, and similar types of therapy. To be sure, there has hitherto been ample justification for this lack. They have been new agencies—new, at least in respect of their modern application—and therefore in the period of trial and error.

But surely the time has now come when a systematic and authoritative standardization may be undertaken. In drug therapy, we have the standardization of the pharmacopeia, the formulary, and the medical dictionary. It would seem that, if the physical modes of therapy cannot find representation in these standard works—and we believe there are grave objections to such inclusion—there ought to be compiled and published, by a properly constituted commission, a similar standard of drugless therapeutic agencies. Precisely similar, of course, it could not, in the nature of the case, be. But its principle should be carried out, namely, the universal standardization of the indications, dosage, and effects of physical modes of treatment. Such a step would go a long way toward establishing them in the profession, as well as enhancing their usefulness.—Editorial in the *Medical Standard*, Nov., 1910.

"Pleasure which cannot be obtained but by unreasonable or unsuitable expense must always end in pain."—Saml. Johnson.

ABSTRACTS AND TRANSLATIONS

HYDROTHERAPY.

Hydrotherapy in Pediatrics.—The *Archives of Pediatrics* declares that hydrotherapy is the best and safest means of controlling fever in children. Medicinal antipyretics, especially the coal-tar products, are contraindicated. There should be no fear of using cold water in scarlatina, and no harm can result therefrom if judiciously employed. For occasional rises in temperature to 103, 104 or 105° F., no interference other than a tepid sponge bath at 85° F. is necessary. When the temperature persistently remains elevated above 103° F., or when there is hyperpyrexia (to 105, 106 or 107° F.), *particularly when there is great nervousness or restlessness*, systematic bathing should be instituted. Young infants, however, stand cold poorly, and for them the graduated bath (98 or 95° F., lowered to 85 or 90° F.), or the warm bath alone (90 to 95° F.), should be employed. In older children the temperature may be lower (85° F. lowered to 75° F.); or the cold pack may be used; by the frequent application (every fifteen to twenty minutes) of a wet sheet or towel, extending from axillæ to hips, and wrung out in water at 70 or 80° F.; or the towel may envelop the trunk and be repeatedly sprinkled, first with tepid, and then with colder and colder water, until the patient's temperature falls.—*Medical Brief*, Sept., 1910.

The Principles of Hydrotherapy.—Thomas McCrae of Baltimore, in an excellent paper discusses this subject under three heads: Internal, local, and general hydrotherapy. One of the most marked examples of its benefit is seen in the acute infections, in which the greatest danger lies in toxemia. In some of the lesser infections, such as tonsillitis, some forms of chronic arthritis apparently of toxic origin, and in some nervous diseases, the effects of the internal administration of water are marked. The absurdity of giving diuretic drugs without also giving water is admitted. One should consider the condition of the circulation and the kidneys, but, in general, these are more liable to be injured by toxins than by hydrotherapy. In typhoid fever or septicemia, for example, one should try to have the patients pass at least 3,000 c.c., or, better, 5,000 c.c. of urine every day. In pneumonia one could hardly reach such amounts; probably 2,000 c.c. would be as much as could be passed.

In certain diseases, like gout, arteriosclerosis, or chronic arthritis, one advises the free ingestion of water as a routine measure, having regard always to the state of the circulation. Metabolism is probably helped and the excretion of toxins aided. The influence on the digestive tract should be kept in mind, however, as too much water might be injurious to an atonic stomach.

In local hydrotherapy the circulatory and nervous systems are especially involved and it is sometimes difficult to say which plays the more important part. There are several factors at work, the most important of which is the influence on the blood-flow; and the effect on

osmosis, which is markedly altered in inflamed tissues. In some applications there is an important effect on deeper structures. The use of cold compresses to the thorax in bronchitis is mentioned. The effect on local nervous influences is shown by the relief of pain, and it is possible that the sympathetic system is also involved.

General hydrotherapy is mainly employed by the use of baths, which are of value in both chronic and acute infections as well as in various nervous disorders. As in the local use of water, both the circulatory and the nervous systems are affected. The use of baths in fevers, and as relief for insomnia, is mentioned as well-recognized. Friction is a good adjunct to the bath as it stimulates the circulation.—*Journal A. M. A.*, Nov. 5, 1910.

The Effects of O Baths in Basedow's Disease.—It was recently announced by Kunk that oxygen baths are particularly adapted for the symptomatic treatment of Basedow's disease, because they induce a subjective sensation of coolness and thus enable the use of high bath temperatures which are pleasant for patients who are sensitive to great warmth, without falling below the point of indifference.

It can be shown that the oxygen bath also has a favorable influence on abnormally augmented metabolism in this affection. After the very first bath the nitrogen excretion is materially lessened and usually the elimination of salts in the renal secretion rises while the latter is increased in quantity. Ordinary baths of the same temperature and duration have an unfavorable effect both on nitrogen and salt excretion.—Wunder, in *Medizinische Klinik*, No. 24, 1910.

Hydrotherapy in the Treatment of Enteric Fever.—The value of hydrotherapy was known to our ancient sages, and regular bathing of the body and keeping the skin in a healthy condition were held in high esteem. Besides cold bathing was recommended to be used in some inflammatory fevers and in madness. But the credit of having established the treatment of fevers by bathing belongs to James Currie, of Liverpool, who started this treatment from the time he saw how Dr. William Wright, afterward president of the College of Physicians, Edinburgh, when suffering from fever on board ship, went on deck and had three bucketfuls of cold water thrown on him to his immediate relief.

The chief application of the bath is in cases of typhoid fever, and it was in this disease that the cold baths were most energetically used. But the elaborate process in cold-bath treatment can hardly be carried out in a private family, and in desperate cases in which cold applications to the head have not been able to bring down the temperature we should adopt some other means, as by itself it is injurious. Cold sponging is very good and ordinarily serves our purpose excellently well. But cold bathing as a routine treatment can be carried out only in a hospital. The general rule should be to give a cold or tepid sponging whenever the temperature keeps up to 104° F., especially in the second stage of fever, with but slight morning remission.

Whatever might be the advantages claimed for the cold bath, I must confess I am skeptical in adopting this plan as a routine treatment. During the latter period of the attack it is seldom wise to put a

person into a cold bath. Further, one can easily see the danger attended with lifting the patient several times, and nervous and sensitive patients not infrequently are collapsed. A cold or tepid sponging, if judiciously carried out, with a little toilet vinegar or eau de Cologne, will accomplish the desired effect at a less risk; besides, cold sponging, in addition to reducing temperature, has the advantage of exercising a sedative influence on the nervous system.—B. N. Ghosh, in *Therapeutic Gazette*, Nov. 15, 1910.

Hot and Cold Irrigations in Gynecology.—Attention is called to the value of cold vaginal irrigations, the temperature of the water being 70° F. gradually cooled to 60° F. These are efficacious in metrorrhagia.

Hot vaginal irrigations, using 40 to 50 quarts of hot water per treatment, followed by hot, perigastric irrigations are also useful in cases of pelvic cellulitis, ovaritis, or salpingitis, better results are obtained when the irrigation is effected through the rectum. The temperature of the water should be from 120-130° F. It is allowed to flow into the rectum very slowly and patient is requested to retain it for half an hour.

The following advantages are claimed for this method:

1. Increased local blood supply.
2. Removal of inflammatory exudates (via the hyperactive lymphatics).
3. Contraction of muscle fibers tending to loosen adhesions.—Rebaudi in *La Ginecologia Moderna*, Sept., 1909.

ELECTROTHERAPY.

The Faradic Current in Aphonia.—F. H. Johnson reports a case of aphonia of twelve years' duration following laryngitis, and a similar case of more than two years' duration, both of which were successfully treated by means of external faradization. The secret of success lies in the regular and persistent use of mild currents, which are not calculated to produce violent contractions of opposing healthy muscles. Where the laryngoscope shows marked swelling and congestion of the cords the mucous membrane must be attacked vigorously on orthodox lines, and here again one is likely to meet with little success if the nasopharynx is in an unhealthy condition. The author urges the necessity, in any given case, of making sure that the aphonia has really resulted from such simple causes as catarrh, overstrain, or a combination of both. Thoracic aneurysm, lesions of the central nervous system, malignant growths, the ulceration of syphilis or of tubercle—these must always be borne in mind as sinister possibilities, and it is at least a waste of time to employ faradization in the case of a patient who subsequently dies from cancer or who is in condition to be cured by iodide of potassium.—*The Lancet*, Nov. 5, 1910.

Electricity in Prostatic Disease.—I have treated twelve cases of prostatitis following specific infection. In three I was forced to discontinue treatment because of specific re-infection. In all the other

cases I secured a cure. One of these cases that had resisted all other forms of treatment for five years was discharged in three and a half months and the others, of shorter standing, required shorter courses of treatment. I report here a case of senile hypertrophy of the prostate. S. J., eighty years old. For four months it had been necessary to catheterize this patient daily and for three weeks previous to my taking charge it had been necessary for the surgeon to use a metal catheter with prostatic curve once or twice daily. Patient was greatly enfeebled, showed emaciation and a decided senile tremor. Cystitis was present. I began treating him daily with the H. F. current per rectum. Three weeks after the first treatment we were able to pass with no difficulty a linen catheter with Mercier curve, and three weeks after that—and ever since—he has been catheterizing himself, using a straight soft rubber catheter. What is of equal interest, and shows the remote effects for good of this form of electricity, during the spring the senile tremor disappeared entirely; and since last summer his general health has been as good as is possible for a man of his years. There has been no symptom of cystitis for over ten months.

It is my opinion, based on an experience extending over four years, during which I have treated a great variety of cases not mentioned herein, that high frequency electricity as a therapeutic agent has come to stay, and I have no regret for the time I have devoted to developing it in my own way. As a therapeutic agent it is far more potent than any single agent that is within my knowledge and its possibilities are unlimited.—W. G. Lewi, in *Albany Medical Annals*, April, 1910.

Electric Treatment of Poliomyelitis—A Comment.—Everyone must agree with Dr. Diller (*Journal A. M. A.*, November 5, p. 1663) that electrical currents which produce pain and nervousness are harmful to children with poliomyelitis. But there is a difference of opinion as to whether or not any benefit is to be derived by passing electrical currents through the muscles which have ceased to respond on account of atrophy. Many observers believe that a galvanic current stimulates muscle growth. As to this, lacking precise data, my personal practice is dependent on such authorities as Duchenne, Bergonie, Zimmern and Erb, who recommend the daily use of the current even when there is no response to stimulation.

Be this as it may, the main advantage of galvanic stimulation of the muscles after poliomyelitis is the excitation of their physiologic contractility, a function otherwise unprovokable in muscles of which the nerve supply is destroyed. It should be obvious enough that the excitation of this function is possible only *before* the structures on which it depends have disappeared. These are the muscle elements. As degeneration of these is well under way in three weeks, it should be equally obvious that the use of galvanic stimulation should not be delayed beyond that period. To postpone it for four months, as some advocate, is to dispense with it at the very time when it is most urgently required. It is to this unscientific delay that must be attributed the difficulties due to the need of such powerful currents as are required in order to produce a visible contraction when only a few fibers remain in the muscle stimulated.

Again, when the therapist omits the elementary precaution of gradually accustoming a child to an electrical application, and alarms the child by suddenly making and breaking the current before the little patient is accustomed even to the sight of the battery, there is created another source of discredit of the only means we know of to prevent muscular atrophy of peripheral-neuron type.

In the Washington epidemic this year, electricity has been extensively used immediately after the acute stage of the disease; and I have cognizance of only one instance of trouble of the kind alluded to by Dr. Diller. This was in the case of a girl aged 11, and was due to the injudicious suggestions of the mother, whose whole attitude expressed dread of the power of electricity. She derived this, in part, I believe, from previous advice that electricity was likely to do harm if used within four months of the commencement of the disease. The child herself was willing to bear the discomfort of the application, and the serious perturbation did not occur until some time after I had left the house. Hence the electricity itself cannot be blamed for an outbreak which was clearly suggested to the child.

It is unfortunate that the exaggerated claims of electricians as to some of their powers should prejudice one of the few clearly established medical uses of an electrical current, viz., the keeping alive, by maintaining its contractile function, a muscle which can no longer be stimulated either reflexly or by the will. Massage and stimulants of reflex activity like strychnin and brucin are equally unable to accomplish this. The faradic current is entirely inefficacious, acting as it does only mediately through nerve.

The galvanic current itself should not be applied where the nerve enters its muscle, but near the insertion of the muscle; for at the motor point it acts only by stimulating that portion of nerve which is not destroyed. The stimulation of this is the very thing we wish to avoid; for galvanism's only use is in supplying an impulse to those muscle-fibers which are no longer connected with a functioning peripheral motor-neuron. On reintegration of the neuron, after subsidence of myelitis—a matter of some months—the need for electrical stimulation ceases as regards that particular muscle fiber; for then contractility is once more obtainable by means of the will. The devices for stimulating this, where small children are concerned, have been well laid down in the report of the New York Committee of 1907.—Williams, in Correspondence Dept. *Journal A. M. A.*, Nov. 12, 1910.

RADIOTHERAPY.

Leukemia Treatment by the Roentgen Rays.—Clarke believes that although the X-ray treatment does not result in cure in leukemia, it gives a greater measure of relief in most cases than is derived from any other form of treatment, and prolongs life. He reports four cases and says that if ordinary precautions are taken, and a careful watch kept on the state of the blood as regards the red cells and hemoglobin, and on the condition of the urine throughout the period of treatment,

it seems to be devoid of danger. The presence of a slight albuminuria in one case and of marked glycosuria in another formed no contra-indication to this form of treatment, as no trouble was experienced. The Roentgen rays should be applied over the long bones and vertebræ as well as over the spleen.—*Bristol Med.-Chir. Journal*, Sept., 1910.

Sterilization of Women by the Roentgen Rays.—Görl reports nine cases in which the menopause was brought on by Roentgen exposures. Some of the women required 80 exposures for the purpose, and this slow, gradual extinction of the ovarian functioning he regards as one of the advantages of the method. He states that the general stimulating action of the rays was soon evident in the improved general health; no climacteric disturbances were noted in any case. The uterine myomata present in these cases subsided nevertheless, probably secondary to the sterilization process. The method is especially indicated, he says, for menorrhagia from a cardiac defect, nephritis or myoma when operative treatment is inadvisable. The exposure was never strong enough to induce erythema.—*Münch. med. Wochenschrift*, Aug. 23, 1910.

The X-Ray Treatment of Cancer.—W. A. Pusey in an excellent and very comprehensive article concludes that: No one can doubt, if he will take the trouble to investigate, that carcinomatous tissue in the skin can be destroyed with X-ray. On the basis of a large experience in primary and secondary carcinomas of the skin, he believes that carcinoma tissue in the skin can be destroyed by exposure to X-rays as by any mechanical or chemical method; that the method, therefore, can be used with assurance, and that the results as regards permanency are fully as good as those obtained by any other methods. There are certain theoretical advantages which the use of the X-ray offers over other destructive methods.

First.—It is painless and avoids the ordeal of operation. This is an advantage not only of humane consideration, but of practical importance, because it enables one to treat early lesions in cases in which the patient will not at any time accept the gravity of the situation and submit to operation or any other method of gross destruction.

Second.—The method may be so used as to destroy carcinoma cells, but leave in large part the connective tissue stroma intact and in condition to repair itself.

Third.—Accordingly it leaves small scars.

Fourth.—It can be used in cases in which the surrounding healthy tissue cannot be sacrificed. This means that:

Fifth.—It is valuable in certain cases in which ordinary methods are objectionable, because they involve extensive operations and serious subsequent disfigurements, as, for example, about the eye and nose. This means further that:

Sixth.—It has a field of usefulness in some cases in which ordinary methods are impossible, because of the amount of destruction of tissues which complete removal would require; in other words, it may be used to produce a radical result in some inoperable cases and to improve and inhibit the course of other inoperable cases.

These theoretical advantages of the use of X-rays are a practically

verbatim quotation of a statement of Pusey's published seven years ago, and his subsequent experience confirms him in the belief that their accuracy has been quite established.—*Journal American Medical Association*, Nov, 5, 1910.

VACCINE THERAPY.

Typhoid Vaccines in Typhoid Fever.—J. M. Anders of Philadelphia, gives some of his experiences with this method and illustrates them with two temperature charts. He does not believe that vaccine therapy is the routine treatment, but thinks that in the treatment of typhoid fever it should receive a more extended trial than hitherto, more particularly in the earlier stages of mild types of the disease. Finally, in the present state of our knowledge, the value of vaccines for the following purposes must be conceded: (1) as a means of prophylaxis; (2) in suitable cases when continued during convalescence, to prevent relapses; (3) to combat local infections with the typhoid bacillus, as for example, bone suppurations which arise in the period of convalescence, and (4) for the removal of the typhoid bacilli from the feces and urine in the case of typhoid carriers.—*Journal American Medical Association*, Dec. 1910.

Tuberculinum Purum in Advanced Tuberculosis.—Frederick A. Deal made use of purified tuberculin in the treatment of seventeen cases of advanced tuberculosis, with marked benefit to the patients. Its use causes no reaction of any amount, and it may be safely used in the late stages, in which tuberculin has been regarded as not indicated. It causes reduction of fever and lessening of catarrhal symptoms, of infiltrates, and of subjective symptoms. These results are encouraging, and it should be used in ameliorating the condition of these unfortunate persons. It causes no injurious effects. The action of this purified tuberculin is in marked contrast with that of Koch's old tuberculin, which causes a marked and injurious reaction in far advanced cases.—*Medical Record*, Nov. 26, 1910.

The Rationale of Vaccine Therapy.—The fundamental principle of vaccine therapy as the author conceives it is to exploit in the interest of the infected tissues the unexercised, immunizing capacities of the uninfected tissues. To illustrate the meaning, take a case of localized infection. Here there is a condition in which the invading organisms are holding their own or getting the upperhand. Our object is to turn the tables on them. We inoculate into some other part of the body microbes which are similar to those which the patient has to combat. Two points of difference between inoculation and original infection: First, microbes in vaccine are dead; second, the dose is so regulated that the organism of the patient must inevitably win at the site of inoculation. This victory is won by the elaboration of anti-bacterial substances. These are generated in such a case in larger quantities than is necessary for the destruction of the bacterial elements which have been introduced. The surplus of specific anti-

bacterial substances which have thus been elaborated, will now find, through the lymph and blood stream, its way to the focus of infection. Here it will aid the defensive forces of the organism which before were ineffectually combatting the invading microbes. The victory which the uninfected tissues have won over the bacterial elements of the vaccine will in this way lead up to a victory of the infected tissue over the microbes they have to combat.

This new therapeutic method makes new demands on the medical man. First, he ought to have some knowledge of bacteriology; second, he ought to know the general principles of immunization; third, he ought to know, in connection with each vaccine, the minimum effective dose; fourth, he ought to know the general conditions which effect the sensibility of the organism; fifth, he ought to understand how to adjust the dose to the requirements of the individual case.—Sir. A. E. Wright, in *The Lancet*, Sept. 17, 1910.

Vaccines vs. Hydrotherapy in Typhoid.—Thirty-two cases are reported in which a comparative study of the value of treatment by the older method of hydrotherapy, either by the tub bath or sponging, and by vaccines, was made. Twenty-one cases were treated by hydrotherapy, and eleven cases with vaccine. The diet in general was of the high caloric variety. No drugs were employed, but strychnine and whiskey were used as stimulants in the severe cases. In the cases treated by vaccination the vaccine was given subcutaneously in the gluteal region every second or third day, each dose being either 10 or 50 million bacilli, except in a few instances where 250 million were administered. No fever reaction from the injections was obtained. Occasionally a slight local erythema or itching was noticed at the point of injection, which cleared up without treatment. No difference in clinical or laboratory effects could be noticed between the smaller and larger doses.

The results noted were briefly as follows: The agglutinins were markedly stimulated by the vaccines, complete agglutination being often observed in dilutions as high as 1:500 to 1:1000, while cases without vaccines showed incomplete agglutination in 1:80 dilution. In but few cases did the febrile course seem shortened, but the abrupt change from the sustained fever to the amphobolic type seemed hastened by vaccination. The average day of defervescence was about the same for the vaccination and the hydrotherapy cases, and the temperature averaged equally high in both series. Hemorrhage was equally frequent though not so severe in the vaccinated cases. Relapses were noted with more frequency—30 per cent as compared with 10 per cent—but were in all cases mild. No death occurred in the vaccinated, though these were in no way selected cases; four occurred in the other series—one each from hæmorrhage, toxæmia, perforation, and pulmonary thrombosis. Headache, gastro-intestinal symptoms and toxæmia were far less frequent in the vaccinated than in the other cases, and the absence of discomfort seemed striking, while convalescence was more rapid. Histories of the four cases are given, illustrating the advantages of the vaccine treatment in these latter respects.—Hollis, in *Medical Record*, Oct. 8, 1910.

Bacteriotherapy in Certain Skin Diseases.—Engman concludes: 1. The dose of all forms of vaccines should be at first small. Doses of bacterial suspensions were, of course, approximate. 2. Small continuous doses were best. 3. Increasing the dose was frequently risky. 4. Stock suspensions they had found very reliable and could be used in most instances. 5. Autogenous vaccines were indicated when stock suspensions failed. 6. Clinical indications alone had guided them in their latest and best results. 7. The opsonic index had proved to be unreliable and impracticable and was not necessary. 8. The failure to obtain results in vaccine therapy might be due to faulty technique. 9. Vaccine therapy would fail in a certain percentage of cases. 10. Vaccine therapy was indicated in diseases of the skin due to a specific microorganism. 11. In vaccine therapy we had at last a reliable beneficial agent in combating the deeper and more virulent staphylococcic infections of the skin.—*Medical Record*, Oct. 15, 1910.

Vaccine Therapy in Cutaneous Diseases.—T. Caspar Gilchrist relates the results of his experience with the use of vaccines in the treatment of cutaneous diseases at the John Hopkins Dispensary and in private practice during the last three and one-half years. Over 300 cases had been treated. As far as vaccine therapy was concerned in the treatment of cutaneous affections, Dr. Gilchrist said his experience might be summarized as follows: He had found it to be a distinctly valuable adjunct to our therapeutics. The *staphylococcus albus* vaccine was of undoubted value in the treatment of all pustular affections of the skin, but especially, in his experience, in the treatment of relapsing furunculosis, staphylococcic dermatitis, sycosis-non-parastica, in certain forms of eczema, in pustular rosacea, and in acne when the disease was largely secondarily infected with the staphylococcus albus. He had also found the vaccines to be of value in the treatment of erythema multiforme, especially of the relapsing bullous type, and in rosacea where the flushings were decreased by the vaccine therapy. It was also helpful in dermatitis herpetiformis and pityriasis rosea, so much so that he would recommend vaccine therapy to be tried when the disease did not yield to the usual method of treatment. *Bacillus acne* vaccine he had found to be of great value, especially in the treatment of those chronic nodular relapsing types of acne vulgaris, and it had proved to be in his hands in a great many cases a curative agent.—*Medical Record*, Oct. 15, 1910.

Vaccine Immunity.—Leary admirably reviews our present knowledge of vaccine immunity. About the practical procedures he says that the group of infections for which the average practitioner desires to use vaccine therapy, while comprehensive, is due to the activity of relatively few organisms. Staphylococcus vaccine is now accepted as the standard method of treatment of local conditions due to this organism. In general infections results are less satisfactory because such a general process is usually a pyemia, and the organisms in pyemia are contained in masses of clot and are less accessible to the antibodies which may be formed.

Among local infections, erysipelas responds in most cases with promptness. This is particularly true if an autogenous vaccine can

be obtained. Local septic processes also respond promptly. The empirical use of vaccines made from autogenous throat cultures, and containing usually a mixture of the pneumococcus and streptococcus, has given usually prompt relief of pain and a bettering of other symptoms in a large percentage of the cases of rheumatism treated. The treatment of the associated infection in tuberculosis with autogenous vaccines in which the streptococcus and pneumococcus usually predominate is accompanied by diminution of temperature and relief of cough and night sweats, followed by increase of weight. The same can be said of pneumococcus and gonococcus processes.

The frequency with which *B. Coli* is an infecting agent has only been fully appreciated since vaccine therapy has been inaugurated. Toxic intoxication can be relieved usually within a few hours. The response in bladder infections, where well drained, is rapid and permanent where reinfection can be guarded against. Tuberculin, in proper doses, is a valuable addition to standard methods of treatment. Its use, however, is associated with dangers which make extreme caution necessary in its exhibition. Wright's method, which calls for an extremely small dose at weekly intervals, seems to eliminate all dangers. —*Boston Med. and Surg. Jour.*, Oct. 6, 1910.

The Bacterin Treatment of Pneumonia.—In an article Black reports that he recently treated a case of pneumonia with pneumobacterin. The results were all that could be wished. The patient, aged 57, had a chill, bloody sputum and all signs of pneumonia on right side. On second day he injected 25,000,000 bacteria. The next morning the temperature was down to 101, and pulse accordingly lowered. To make a short story of it, he injected the same dose on three days, at which time the patient had a normal temperature, and lung had cleared up nicely. The temperature fell by lysis. On the eighth day the patient was out of bed.

His conclusions were:

"From what I have used of pneumo-bacterin I consider it the superior treatment for pneumonia."—*The Medical Summary*, Nov., 1910.

Bacterin Therapy.—B. A. Thomas summarizes the present status of bacterin therapy. It has been true with bacterin therapy, as with the discovery of Koch and tuberculin therapy and with almost every important advance in medicine, that the pendulum of applicability at first swung through too great an amplitude. Concerning the relative values of the opsonic index and clinical symptomatology as guides in the administration of bacterins, it is his firm conviction that the clinical symptoms are of primary importance, and that the index must be relegated to second place. It is utterly out of the question for the average clinician to master the bacteriology and technic required for the reliable determination of the opsonic index, consequently bacterin therapy, in order to enjoy the popularity which is its due, must be governed by the subjective and objective signs and symptoms. It is natural to suppose that the best results in immunization are to be secured by employing autogenous cultures. Experience has already justified this procedure, although there are two exceptions *B. tuberculosis* and

M. gonorrhea, organisms which owing to cultural characteristics and other difficulties render it inexpedient to attempt the preparation of an autogenous bacterin. As regard the streptococcus, excellent results are reported from the use of stock bacterin preparations, especially when the bacterin is polyvalent, i. e., composed of several strains. Cases adaptable to bacterin therapy may be classified: (1) Acute, sub-acute or chronic. (2) Febrile or non-febrile. (3) Those in which the infection is localized or general. (4) Those in which the lesion is superficial or deep. Those cases in which bacterin therapy is positively contraindicated, are the diffuse infections, characterized by septicemia, pyemia or grave sapremia.

In a general way it may be stated that the inoculations of bacterins may be administered every 5 to 13 days, depending upon the clinical symptoms or additional evidence adduced in some cases from the determination of the opsonic index. The size of the dose must be controlled in the same manner, as no hard and fast rule can be laid down. Thomas emphasizes the statement that bacterin therapy is merely a valuable accessory to nature in the art and science of healing, and is not a "cure-all." Anxiety on the part of the therapist to *push the treatment* when beneficial results become apparent, will lead not only to failure but to disaster, and place a therapeutic measure of great worth in disrepute.—*International Clinics*, 1910, Vol. iii.

DIETETICS.

A Vegetarian Diet in Psoriasis.—Bloch reports a case in which a man of 40 had had for seven years typical psoriasis of the nails, hands, scrotum and parts of the body, which had resisted all forms of local treatment and arsenic. Bloch ordered him to drop meat from his diet and the result was surprising even in two weeks, and not a trace of the psoriasis was left by the end of three months.—*Med. Klinik*, Sept. 25, 1910.

The Miller Diet in Typhoid Fever.—The tendency at the present time is to provide patients suffering from this disease with a more generous diet. The "Miller diet," so called, as employed in one of our Chicago hospitals, is as follows: At 8 a. m. the patient is given a soft-boiled egg and some well-cooked cereal, with cream; at 10 he is given egg-nog; at 12 m., 50 Grams of bacon, a soft-boiled egg and a custard; at 2 p. m. another egg-nog is given; at 4, gelatin with cream and some palatable fruit sauce; at 6, egg, bread and butter, with cream. Under this diet it is stated that the mortality has decidedly diminished.—*Clinical Medicine*, Nov., 1910.

Alimentotherapy of Diabetes Mellitus.—Graul writes this paper largely in the interest of von Noorden's oatmeal diet, which appears to have secured brilliant results at times, especially at the first appearance of acetonuria. The glycosuria should improve in the same degree as the acetonuria. In a certain percentage of cases prolonged oatmeal diet causes an increase in the glycosuria. The author then substitutes a strict diet of vegetables and vegetable albumin, which is efficacious

against both glycosuria and acetonuria. Occasional fasting periods also improve the last-named condition. It is understood that the author is writing only of moderately severe diabetes, especially when associated with acetonuria. These cases should not be fed with large quantities of meats, fish, eggs, butter, etc., because such a diet produces a great strain on the already diseased organs and leads to such complications as nephritis and arteriosclerosis, and also tends further to the production of carbohydrate intolerance, the object of all plans of treatment being to preserve and restore tolerance to this class of foods. —*Deut. med. Wochenschr.*, Nov. 17, 1910.

Diet After Abdominal Operations.—In the *London Practitioner* is an article on the above topic by Paterson, and as it deals in a very interesting manner with this important subject abstracts may be made with propriety.

Paterson says that there is still a lingering superstition that patients must be half-starved after an abdominal operation. A few months ago a surgeon writing on this subject advised nothing but water for twelve hours and in stomach operations nothing but a little water for three days. The author regards such starvation as totally unnecessary, and in old or feeble patients positively harmful. Even after operations on the stomach he begins feeding his patients at once. In one of his gastro-jejunostomies for pyloric obstruction, he allowed the patient to have two mutton chops and a milk pudding on the third day. He was thoroughly exhausted by months of vomiting, and was ravenously hungry. He thoroughly enjoyed his meal, and was all the better for it. Paterson does not, of course, suggest this as a routine treatment, but mentions the case to emphasize how groundless is the fear of early feeding. If the anastomosis be efficiently performed, the risk of the sutures giving way may be neglected so far as feeding is concerned.

As soon as the patient wishes a drink small quantities of hot water are given, and if this is retained one ounce doses of milk diluted with two parts of water. The quantity is gradually increased up to two ounces hourly. A cup of tea is allowed the same day as the operation if the patient wishes it. On the day after the operation, Benger's food and calves' feet jelly are given as well as milk. As soon as the bowels have been opened the patient is allowed fluid *ad libitum*, eggs, thin bread and butter, and other soft solids, and usually ordinary diet is resumed in a week or ten days. As a general rule the patient's inclination is a reliable guide to the quantity of food required, although in a few cases some coaxing and diplomacy are necessary to induce the patient to take adequate nourishment. It is impossible to lay down hard-and-fast rules as to feeding, and general rules have to be modified in individual cases. After operation for septic peritonitis no food is given by the mouth until the bowels have been thoroughly well opened. After gastro-jejunostomy for gastric or duodenal ulcer, especially if associated with hyperacidity, the diet must be more limited in quality, although the quantity need not be curtailed. Paterson always urges these patients to keep on a milk diet for at least six months. On the other hand, after gastro-jejunostomy, or partial gastrectomy for cancer, he feeds the patients up more rapidly, allowing mutton or

beef essence, jelly, eggs, and Benger's food on the second day, and often fish or chicken cream on the third day. Patients who have been exhausted by weeks or months of vomiting will not stand starvation, and their tissues possess feeble power of repair unless they are provided with plenty of nourishing food.—*American Medicine*.

Dietetics in Treatment of Digestive Disturbances.—A. Bickel discusses what is meant by a light digestible diet. Does this mean foods easily attacked by the ferments, or easily passed along out of the stomach, or not inducing much secretion of digestive juices, or does it mean easily absorbed? The individual conditions in each case require that the diet should conform to the special manifestation of incompetency, and much more research is needed in this line. The effect on the motor and secretory functions depends on the physical structure and chemical composition of the food. The more finely divided the food the less the demands on the motor organs, and also the less the stimulus for secretion. Low temperatures seem to stimulate motor functioning; the more concentrated the solution the greater the stimulus to secretion. The chemical composition of the food is also important from this point of view; human milk leaves the stomach quicker than cow's milk, even in the same dilution. He lists as articles that have little, if any, effect in stimulating gastric secretion: water, alkaline mineral waters, tea, cocoa, cream, egg albumin, other pure native albuminoids in aqueous solutions; also 0.9 per cent salt solution. Of solid foods he mentions boiled meat, fats of all kinds, boiled vegetables, starch and sugar; the vegetables should be taken in the form of a puree, that is, mashed soft.—*Medizinische Klinik*, March 20, 1910.

Grape Juice in Place of Milk in Typhoid.—Milk—sweet milk—is the worst diet that could be given to a typhoid fever patient, because it is the very best medium in which to develop the typhoid fever bacillus. If the *bacillus typhosus* will grow an abundant crop in milk in a test tube in the incubator in the laboratory, is there any reason why it will not do so in the intestinal tube? The objector may say that because of the acid gastric juice the milk is acidulated and becomes unfavorable for germ development, but we must recollect that when a patient is suffering from typhoid fever the secretion of gastric juice is very low and often suspended entirely, and that the milk taken as food is a most excellent culture medium for this particular germ. Moreover, the milk is *not* a liquid diet, as we have been taught, but becomes a solid soon after it is swallowed into the stomach, and may be found (post-mortem) in both the stomach and intestines in large, tough, leathery curds, and the odor from this mass is sufficient to convince any one that it is a bad diet in typhoid.

What, then, should we give the typhoid fever patient to maintain his strength and vitality? This is the all-important question. What can we give to maintain the strength of the patient that will not act on the germs in the same way? That will feed the patient but starve the germs?

In my laboratory course in bacteriology I learned that pathologic bacteria would not thrive well in an acid medium, hence I must test

all media for reaction, and if acid make them either neutral or *slightly alkaline* if I wished to develop millions of bacteria. Therefore conversely, if I wish to inhibit the development of the microbes I would acidulate the culture media.

Any one who will take the pains to attempt to cultivate the *bacillus typhosus* in grape juice will find that they will develop very badly if at all. Almost any kind of fruit juice will act almost as well. Hence I give my typhoid fever patients an *abundance* of grape juice, sour apple sauce, artificial buttermilk, made with lactic acid germs, and acidulate all the water the patient drinks with hydrochloric acid. In this way the intestinal canal is a very unfavorable place for the growth of the germs, and if it (the canal) is thoroughly cleaned out at the very beginning of the disease, the fever will run a very moderate course and convalescence will be established in a week or ten days.—D. W. Reed in *Medical Summary*, Dec., 1910.

MISCELLANEOUS.

Infundibulin a Galactagogue.—It was found that in the early nursing period the injection of infundibulin into a vein rapidly and greatly increases the flow of milk in the goat. The nipple had a canula inserted into it, and a water aspirator produced the suction necessary to empty the udder. The milk aspirated before and after the injection was caught in a graduated flask and measured every five minutes. This increased flow of milk is evidently not due to an increased amount of blood in the udder, as infundibulin contracts the arterioles. This fact can be correlated with the increased size of the pituitary in pregnancy, although in these cases the enlargement is chiefly in the anterior lobe.—Ott and Scott in the *Monthly Cyclopedia of Medicine*, Nov., 1910.

The Treatment of Constipation by Massage.—The importance of massage in the treatment of constipation is generally admitted and a proper technic was brought before the Congress of Physiotherapy this year.

After having massaged the entire abdomen, which acts on the general and abdominal circulation, the nerve plexuses, the gastric, intestinal, hepatic and pancreatic functions and on the muscles of the abdominal wall *per se*, massage of the large intestine is begun. The maneuvers should be begun over the sigmoid flexure, being made from above downwards with the right hand of the operator, while the left hand, being forcibly placed over the right side of the abdomen, immobilizes the intestinal region, which is being massaged by pushing the gut towards the left. The massage should be composed of pressure movements and little taps given to the intestine with the ends of the fingers descending from the splenic flexure of the colon down the sigmoid flexure and by this means displacing the gas and feces contained in this portion of the intestine, forcing them down towards the rectum.

The cecum and transverse colon are next treated. In the majority of dyspeptics, not including those afflicted with diarrhea or constipation, with or without muco-membranous enteritis, the cecum will be found painful on pressure; therefore massage should be begun carefully over this delicate area by a sort of palpation with the ends of the fingers and the ulnar side of the hand. A few vibrations should be added, anesthetic effect of which is not long in being produced. After this deeper and more energetic maneuvers are executed with the ends of the fingers brought together so as to form a cone, making a double movement of rotation and pressing, or with the hands closed and gently pushed one after the other along the course of the large intestine from the cecum to the sigmoid flexure, not omitting massage of the fundus of the gall bladder by gentle pressure, which will express the bile into the intestine. The right and left angles of the colon escape direct maneuvers, and in order to reach them one should place the hands exactly as if a movable kidney were being searched for, and then a movement of rotation and vibration be imparted which will penetrate into the region hidden under the costal arch, near the liver on the right and the spleen on the left.

Deep tapping may be given over the entire course of the large intestine, and is especially indicated for exciting the muscular contractility of the abdominal wall and the intestine, while the maneuvers already described act particularly on the deep circulation in the abdominal vessels and the progress of the feces and gas towards the rectum.—Abstracted from *Boston Med. and Surg. Jour.*

The Treatment of Acne by Bier's Hyperemia.—Dittrich calls attention to a method of treating acne by the use of dry cups, as devised by Klapp and Bier. It is simple, within the reach of every practitioner, and gives satisfactory results. The technic is as follows: A dry cup, to which a rubber bulb is attached for exhausting the air so as to cause suction and thus hyperemia, is applied to the affected area after all pustular lesions have been opened. The cups should be sterile and the treated area be cleansed with alcohol. The broad edge of the cup is anointed in order to secure firm attachment to the skin. The cups should be kept on from one to three minutes and reapplied to the same area at intervals of three to five minutes. While an application of the cups with strong suction seems to leave only an evanescent red area, one must guard against applying them too long or too strongly to tissues with underlying bony structures, as this often causes a circular ecchymosis which, although disappearing in a few days, is very objectionable. The pustules discharge at first a puror-sanguineous fluid, which soon changes to serum which should be left on to dry. The papules in a day or two clear up of themselves. Applications should be made daily until the pustular lesions cease to appear. The results are evidently due to removal of the gases from the tissues, to dilatation of the capillaries and a greater influx of the fluid parts of the blood stream. The plasma not only removes the products of inflammation, but at the same time carries and holds at the site of the lesions the new tissue building material. By the production of the vacuum above the lesions, the plugs and comedones are

forced out, which is a marked advantage over the curette with its scar formation.—*The Post-Graduate*, March, 1910.

Dry Heat in Gynecology.—Gellhorn reminds us that we must first remember that we have to deal, in gynecology, with a number of chronic conditions which cannot be relieved by surgical means. For the treatment of such conditions we have to resort to so-called conservative methods which, in many cases, have given highly satisfactory results, while in others they have signally failed. The more recent method of dry heat has proved superior to the older modes of treatment. The employment of hot-air boxes or chambers is invaluable in the treatment of chronic exudates in the pelvis. The results obtained with hot air in this affection cannot be approached by any other method. The prompt objective improvement is intensified by an almost instantaneous relief from pain. Hot-air therapy has also been very promising in the treatment of amenorrhea. With our growing experience, the sphere of usefulness for this mode of treatment is likely to extend still further. As its application is quite simple, it is equally suited to hospital or private practice. The author describes, and illustrates a neat apparatus of his own invention, for the application of hot air generated by electric light bulbs. It is a semicircular light, and easily portable. It can be placed over the patient in bed and, by its telescopic arrangement, extended to enclose the entire body if necessary. The heat can be readily controlled by eliminating one or more of the eight bulbs used and raised to any degree desired by substituting 32-candle for the ordinary 16-candle power bulbs.—*Amer. Jour. of Obstetrics*, Jan., 1909.

Hyperemia in General Practice.—Michalski emphasizes the value of suction and constriction hyperemia in treatment of many affections in every-day practice, and extols the simplicity and harmlessness of the technic. The cupping bells are the easiest to apply of the two methods, and five minutes' suction treatment daily may have a remarkably curative action. He has a water-jet vacuum pump for regulating the suction but the rubber bulb is almost as effectual. Boils and carbuncles are a splendid field for this method of treatment. When seen early, before they are "ripe," the suction glass alone will sometimes cure them completely in two or three days. Later, it is preceded by a small incision under ethyl chlorid; the contents are sucked out by the cupping bell without pain and healing proceeds much more rapidly than otherwise. Suction hyperemia is also effected in mastitis, and for pains in the scar after a laparotomy, but he warns against allowing the patient to use the cupping bell without supervision.

The hyperemia induced by the elastic constricting band is particularly useful, he declares, for acute joint affections, especially gonorrheal, and for felons, after an incision to permit aspiration of pus. In surgical tuberculosis the constriction should be a little tighter than with other affections and great perseverance is needed. Bier regards nine months as the average length for the course of treatment, but it may cure without mutilating operations being necessary and this is worth striving for. Cold abscesses must be sought for and the con-

tents aspirated early. The curette is rendered superfluous, he states, by hyperemic treatment either by suction or constriction, but heart disease, diabetes and arteriosclerosis are generally accepted as contra-indications for it.—*Correspondenz-Blatt für Schweizer Aerzte*, Oct. 10, 1910.

CRYMO-THERAPY.

Carbon Dioxid Snow as a Local Anaesthetic.—Since the introduction of carbon dioxid snow or ice in the early months of 1904 and the suggestion of Dr. Pusey in December, 1905, to adopt this method in the United States, considerable progress has been made with its use. Dr. Maylan reports in the Italian literature that he has tried CO₂ snow as a local anaesthetic in thirty cases of localized inflammation, such as boils, anthrax, etc. An application of 5 to 8 seconds was sufficient and it acted quicker and more deeply than ethyl chloride, having a favorable influence on the inflammation and is more easily localized.—*Gazzetta degli Ospedali*, Sept. 10, 1910.

Technique of CO₂ Ice Treatment.—When treating with CO₂ ice which has been firmly compressed and especially when larger areas are involved, Dr. H. P. Fitzpatrick recommends to limit the contact area and exert a firm finger pressure for a few seconds at a time, going successively and repeatedly over the entire surface until the desired inflammatory process exerts itself with the necessary energy. This method is stated to produce superior cosmetic results. It will thus be seen that a small and firm crayon is the most satisfactory medium as it enables the operator to thoroughly observe the progress of the inflammation and reaction. On the other hand the simple application of a batch of CO₂ snow placed on the defective or diseased part is not so satisfactory. It may destroy the lesion, but it will also destroy much more sound tissue than intended and in the majority of cases leaves a hole or depression, thereby spoiling the cosmetic results. In other cases it destroys the sound tissue and leaves the lesion entirely unaffected. Therefore, the smaller and solid crayon is the best weapon in the proper freezing method.

Therapeutic Use of Refrigeration.—During the recent meeting of the American Dermatological Association, Dr. Pusey stated that the principle underlying the therapeutic use of Carbon Dioxid as of Liquid Air was the production of a relatively deep sharply defined inflammatory reaction in living tissue by sudden intense freezing. The advantage of the method was that the reaction could be regulated so that one could accurately produce all the degrees of effect upon tissues. The therapeutic indications for the use of refrigeration were found in the following conditions: First, those in which the production of the stimulating reaction was beneficial. Second, those in which it was desired to destroy certain tissues in the skin by the production of an interstitial sclerosis. Third, those in which it was desired to produce immediate destruction of masses of diseased tissue in the skin. Nearly all of the workers who had used carbon dioxid in Naevus reported favorably upon it with comparison to all other methods of treating

these lesions and the method furnished an almost painless and a convenient means of removing moles.—*Medical Record*, Oct. 15, 1910.

Discussion of the CO₂ Ice Treatment.—During the 45th annual meeting of the Michigan State Medical Society, Dr. Henry R. Varney of Detroit, in discussion said: "In many of the small benign growths and in Naevi, especially of certain depth, and in Lupus Erythematosus and in Lupus Vulgaris the CO₂ Ice Treatment is excelled by no other means of medication or operation. However, a number of these lesions will recur if other stimulants are not employed to encourage or stimulate the surrounding healthy cell and replace the destroyed tissue."

Dr. A. W. Crane, Kalamazoo: "Carbon dioxid snow is a destructive agent. It does what an operation would do, namely, destroys the pathologic condition and a certain amount of tissue and recovery occurs as a process of healing with the pathologic tissue in place. It may be possible that there are some products absorbed into the system so that there will be some blood serum reaction with carbon dioxid snow. If that is true it would rival the X-ray. The X-ray treatment of a skin lesion or Epithelioma of the skin is in the long-run a blood reaction. It is not a process of local destruction. The skin lesion will heal in some cases even without local inflammation, but in a case of Lupus, for instance, if the blood be examined, it will be found that the opsonic index will rise after every X-ray treatment just as though there were a vaccine of a tubercular substance injected. In some way or other by the use of the X-ray, we have introduced a vaccine into the circulation."

Dr. M. L. Holm, Lansing: "In a case which had been diagnosed Lupus, and in which the lesion tended to spread around the nose the man was treated for three months with the X-ray and the lesion continued to spread. CO₂ ice treatment was then resorted to and within three weeks after this treatment was begun the lesion was practically healed."

Dr. F. W. Robbins of Detroit: "We must not take too much into account the fact that the tissue has been destroyed because those who have had experience before these two methods were mentioned apply caustic paste to an Epithelioma, and after removing the paste from a tumor or growth an inch in diameter they would find that healing had taken place."

Dr. A. Biddle, Detroit, emphasized that the CO₂ treatment is not brought forward as a cure. However, those who have watched the development of the X-ray know that its limitations in skin lesions have been very great.—*Journal A. M. A.*, Oct. 29, 1910.

Tell me what I am to look for.
—Faraday.

* * *

The reward for a good deed is
to have done it.—Elbert Hubbard.

* * *

Do not take your work as a
dose, and you will not find it nau-
seous.—Matthew Arnold.

REPRINTED ARTICLES

THE VALUE OF FRUIT JUICES IN INFANT FEEDING.

BY GEORGE DOW SCOTT, A. B., B. S., M. D., NEW YORK.

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The use of fruit juices in the infant dietary has been under investigation by me for many years. The value of fruit in disease has been known from time immemorial, from the period of Dioscorides and Pliny. What little scientific investigation has been undertaken within the last few years has been done mostly by the Germans. As far back as 1750, according to Geoffrey, Forestius had a severe diarrhoea which he apparently cured by the use of overripe pears. The great Linnaeus himself, a sufferer from gout, benefited himself by a strict fruit regime. At the period of our own Civil War, obstinate cases of bowel trouble were cured by eating peaches, the improvement being attributable to a correction of a scorbutic tendency.

Looking over old literature on this subject, I found that one writer believed that grapes promote the secretions without irritation of the intestinal canal, reconstruct the blood, exercise a salutary action on the nervous system and favor the formation of fat.

Modern writers believe the laxative effect of fruit juices superior to the more purgative mineral waters, being beneficial in constipation, in faulty digestion and excellent in non-organic liver and spleen congestions, as well as in anemia and chlorosis. Abroad the grape cures result in giving the patients a sense of well being, of more than ordinary feeling of strength and agility. These grape cures are said to relieve the vomiting and retching of an acid stomach and influence greatly acute and chronic diarrheas, increase the urine output and diminish the acids and salts of the urine as seen in gouty conditions.

Appreciating the value of fruit juices in infant feeding and in infant life, we are astonished at the unwise and empiric use of drugs and medicines during the first twelve months after birth. Castor oil, calomel, and other medicines should be given at this period for a very short time and only in very small doses. Infants at times do need a laxative other than the milk fat. The normal breast milk contains fat, proteid, and carbohydrates plus vitality sufficient for the given infant. A *normal* mother's milk is ideal for her own child. This is not the case with either poor mother's milk or artificial modifications of milk. In fruit juices we have an ideal laxative, as well as an ideal antiscorbutic.

Certain authors divide fruits into two great divisions: flavor fruits and food fruits. The former contain certain vegetable salts of potash, the latter, as the fig and banana, contain a carbohydrate in the form of a sugar called levulose or fructose, which is found in apples, apricots and pineapples, which contain also cane sugar. This levulose is ideally and wonderfully suited to delicate stomachs, much more in fact than is cane sugar.

In passing let me say that in gouty subjects this fructose is a very great aid in the digestion of foods. Hall, on the other hand, divides fruits into three great classes: acid fruits, sweet fruits and bland. Bland fruits are those neither acid nor sweet. When subjected to boiling the gums of many fruits yield a jelly. Cooking renders most fruits more digestible by softening their cellulose and also converts the gums into a gelatinous form. The digestibility of cooked fruit juices in the stomach and small intestine is dependent largely upon the nature of the fruit and the degree of ripeness before cooking. Cooking, let it be said, does not change the chemical composition of the fruit to any great extent, the loss being a few volatile constituents. These juices undoubtedly purify the intestinal canal and render it an unfertile field for the propagation of bacteria:

The general composition of fresh fruit is as follows: Water, 85 to 90 per cent; proteids, 5 per cent; fat, 0.5 per cent; carbohydrate, $5\frac{1}{2}$ to $10\frac{1}{2}$ per cent; cellulose, $2\frac{1}{2}$ per cent; and mineral matters, 0.5 per cent.

Of the proteid 80 per cent is absorbed; of the fats 90 per cent, and of the carbohydrates, 95 per cent.

Following out the classification of Hall, we find under the acid fruits, lemons, limes, grape fruit, oranges, cranberries, currants, and pineapples.

Under sweet fruits are found figs, dates, prunes, and dried raisins.

Under bland fruits, are found pears, grapes, blackberries, melons and bananas.

The acid fruits are valuable for their acids and organic salts, existing mainly in combination with alkalies, as the citrates, malates, or tartrates of potassium, sodium, magnesium and calcium.

When these fruit juices are taken into the digestive canal they are readily absorbed and carried with the absorbed food to the liver, where the acids and the acid elements of the organic salts are oxidized, releasing the potassium, the sodium, and the magnesium, etc., which are changed to carbonates, thus increasing the alkalinity of the blood.

These alkalies are eliminated by the kidney, hence the diuretic action. The acid fruits are, of course, markedly diuretic. Bland fruits are used more for their appetizing flavors.

Sweet fruits are the ripe fruits where in the ripening the cellulose and tannic acid of the unripe fruit are changed to sugar and fruit juices. The excess of acids in the unripe fruit leads to irritation of the stomach and intestines, causing colic and diarrheas. If, however, the cellulose and the acids are in more moderate quantities, as in ripe fruit, a gentle stimulation on the intestinal wall is exerted.

Professor Sheridan reports his conclusions in a series of experiments upon the digestive qualities of certain fruits, such as the fig, pineapple, melon, banana, apple, orange, also lettuce and the dandelion, and finds that the enzymes or ferments in the juices of the plants peptonize the higher proteids and are also proteolytic.

Coming now to my own findings, I will say that the use of fruit

soups is a most important one. I have found them to be excellent in infant feeding.

These soups are made by boiling fresh or dried fruits in water and sugar, pressing and straining through two layers of clean muslin cloth, and serving warm with more sugar, if necessary. The juice will contain albuminates, carbohydrates and organic acids. Although the cooked fruit juices contain all the essential conditions and ingredients of the raw juices, yet they lack the volatile elements which might be called the life of the fruit, the stimulating effects, which are so pleasing and so refreshing.

At times in very young, and in even somewhat older infants, skin eruptions may be caused by the ingestion of unripe or overripe fruit or sour fruit juices (strawberry, orange), when the infant's stomach is disordered and inflamed from faulty milk modification or where the fresh juices and the milk have been given together, causing at times colic from faulty digestion. Certain infants may have an idiosyncrasy to such juices, although I have never observed it.

Bearing these facts in mind, I begin by giving cooked fruit juices to the nursing infant soon after birth, if necessary, and continuing their use until the mother's milk shows a proportionate amount of proteid, carbohydrate and fat and the normal development of the infant is assured.

If the infant can take the raw fruit juices of the orange or pineapple, my favorite juices,—the pineapple juice containing peptogenic and digestive properties—it is well to begin by giving one-half dram juice and one-half dram boiled water, plus cane sugar, once a day, one-half to one hour after milk feeding. Gradually using the plain pure juice once, then twice, then three times or more daily without water, but with the addition of cane sugar.

In the country where oranges and pineapples are few, the crushed fruit juice of the sweet grape, the juice of blackberries, raspberries, blueberries, and ripe raw pears without their cores and pressed through two layers of clean muslin cloth, serve their purpose well.

The use of the fruit juices can be pushed according to the desire, the stools of the infant, the amount of urine excreted, and according to the general condition of the infant; and long after the infant is well, the juices can be continued as an efficient mild tonic.

Drugs and medicines, as I have mentioned before, are almost always borne poorly. Efficient as these juices are to the nursling, they are even more valuable to the bottle-fed infant. Malnourished infants suffering from acute, subacute, autointoxic affections, intestinal disorders and from stomach and intestinal fermentation, from loss of weight, from dietetic eczemas and constipation are brought back, with the aid of these juices and a proper modification of milk, to health.

Many cases diagnosed marasmus, really extreme malnutrition, with faulty digestion and weakened assimilation, as seen in cases of rickets, scurvy and rheumatism can be brought back to the normal or near-normal, unless there is some underlying cause such as inherited syphilis, tuberculosis, or the effects of chronic alcoholism in the parents, with the aid of these juices.

In infants suffering and convalescing from broncho-pneumonia, lobar pneumonia, intestinal diseases, influenza, measles, pertussis, scarlet fever, simple anemia, simple catarrhal jaundice, etc., fruit juices are well borne, and they favor digestive assimilation of foods, the diuretic action of the kidneys and the cleansing of the enteric tract.—Reprinted from *Therapeutic Medicine*, August, 1910.

THE ELECTRICAL TREATMENT OF ENDOMETRITIS.

BY EUGENE HUBBELL, M. D., ST. PAUL, MINN.

This form of trouble is very common and not always easily corrected. Probably the most common method of correcting this condition in the uterine curette. It is not the object of this paper to commend or condemn the curette as generally used, for it has a place in our armamentarium, but is, no doubt, resorted to too often. There are other methods which may be employed. Among these, the use of electricity stands, perhaps, foremost of all other means.

Many cases, on account of circumstances, peculiar conditions, a fear of the anesthetic, or of the knife, deter women from the use of the surgical methods, which, by the way, are not always satisfactory. However, if the surgeon would follow the surgical procedure with a few applications of electricity he would render his patient far greater benefit. Do not understand me to advocate this as the only treatment of endometritis. But it is one of the more useful means of correcting this form of pathology. Some of the advantages are: First, it can be used without an anesthetic or detention in a hospital; second, it does not require the loss of time from employment or duties of home life; third, it can be employed with safety; fourth, in selected cases it is more efficient and permanent in its effects; fifth, it is, of itself, antiseptic in action; sixth, it increases the circulation in adjacent organs and contributes to their strength; seventh, it is almost entirely free from danger when in competent hands, but requires judgment and wisdom to apply properly.

Where there is much granulation present and there is a glairy fluid discharge and not much irritability of the uterus or adjacent organs, the positive copper electrode may be introduced into the uterine canal and a large negative pad applied to the abdomen or back to which is attached the negative pole. The galvanic current is gradually turned on to ten or twenty milliamperes; the seance continuing from ten to twenty minutes according to the judgment of the operator and repeated every three to six days, according to conditions. From three to ten treatments are usually sufficient to effect a cure.

Where there is considerable tenderness of the parts, it is best to reduce this before commencing the treatment proper, for the correction of the endometritis. This is done by the application of hot saline douches, the high frequency electrode treatment, every day for a few days until the tenderness is removed. In some cases I have found that wrapping a uterine probe with absorbent cotton and dipping same in tincture of iodine and inserting to fundus uteri, connecting the same with the negative pole of a constant current, while the positive pole is attached to a large abdominal pad, eighteen to twenty milliamperes employed for a period of

from ten to twelve minutes and repeated within a week if necessary, to be highly serviceable. This method has proven of great value in many cases. I can, perhaps, best illustrate these methods by citing a few cases from my case book.

Case 1.—Mrs. M., aged 30, mother of one child now five years of age, had aborted twice in early pregnancy, has profuse menstrual flow lasting two or three weeks; cervix lacerated, end of cervix is denuded with extensive granulations extending into the cervical and uterine canal. Parts are swollen and very tender. Patient is very weak, emaciated and pale. Advised curette, but she could not go to the hospital just then. Gave one iodine negative intra-uterine electrification, followed by four positive intrauterine applications of the copper electrode once a week as a sort of preparatory treatment for the curettage and repair of cervix; but by the end of these treatments, the granulations had disappeared, the menstrual flow became normal and she was feeling quite well. The operation was postponed. Three months later she wrote me she was normal in her periods, had gained twenty pounds, has rosy cheeks and never felt better in her life.

Case 2.—Mrs. I., aged 40, mother of three children, complained of uterine catarrh, bearing-down pains, weak back, accompanied by severe pains in the lumbo-sacral region. Examination revealed lacerated cervix, uterine canal granular, with a glairy fluid discharge. Four applications from the positive copper electrode (constant current) restored parts to normal condition. The backache disappeared, the patient discharged, well.

Case 3.—Miss W., aged 38, forelady in a book-bindery, has suffered more or less for years with uterine pains and menstrual troubles. She was compelled to go to bed for one or two days every month. Last March she contracted a severe cold and menses did not appear for two months; the suffering was severe. This was accompanied by a severe dry cough, cutting, tearing pains in the chest. Examination revealed a much inflamed and sensitive uterine and vaginal tract; uterus was badly retroverted, cervical canal was so contracted it was with difficulty that I could introduce the finest probe. To this metal probe was attached the negative pole with the constant current (positive pole being applied to the sacrum) and four milliamperes only were turned on for a period of three minutes, then changed to the Faradic current, for a similar period, then back to the constant, and again to the Faradic—thus employing the two currents in alternation, three minutes each. After the second treatment menses appeared, though accompanied by considerable pain. Between the next periods she received two similar treatments, using a larger probe each time. The next period was more copious and free from pain. Between the next period, she also received two similar treatments. The tenderness of the pelvic organs was gone, uterus nearly normal in position; the uterine atresia overcome, and the patient in a fair condition of health, although during the whole time of treatment she was constantly on her feet from morning until night, with a sick and aged mother to care for evenings, much hindering her cure.—Reprinted from *The Medical Era* (March, 1910).

MASSAGE IN THE TREATMENT OF RECENT FRACTURES AND OTHER COMMON SURGICAL INJURIES.

BY H. W. POWERS, M. D., AMHERST, O.

Massage in the treatment of recent fractures, and in various conditions of the body due to disease, is practiced by a large number of its advocates throughout the length and breadth of the universe. We, as physicians, recognize the benefit derived in certain conditions from friction or rubbing judiciously applied, and though we may not generally adopt massage as a regular part of our treatment, yet we unconsciously avail ourselves of the opportunity and use it in these conditions.

The term massage, meaning to knead, is applied to the treatment of disease or injury, administered by rubbing, kneading, slapping or pinching the part affected. The claims of some operators, of the marvelous cures effected by this method, have caused many to take it up. So now we have Doctors of Osteopathy and Mechanotherapy; parlors for massage or vibratory massage; physical culture, the "Swedish movement," and many persons besides, who claim to cure all the ills that flesh is heir to by animal magnetism and laying on of hands.

In this brief paper I have no thought of speaking for or against any of these methods, nor do I hope to bring out any new thoughts on the subject of massage, but rather do I wish to open the subject for discussion, and expect to hear from some of the members experiences in the use of massage that will be of benefit to us all.

Recently I have been reading a little book by Sir Wm. H. Bennett, on "Massage in the Treatment of Recent Fractures." He says the advantages derived from manipulations in sprains, wrenches and singular injuries have been known for centuries, especially as shown in the rapid removal of extravasated blood, the cure of edema, the prevention of stiffness and the checking of muscle waste—complications which are apt to occur in fractures. He advocates the very early, almost immediate, use of massage in simple fractures, and lays particular emphasis on the use of this method for preventing muscle-waste, which we all know obtains when we treat a fracture with a dressing.

In dislocation of the shoulder or elbow, we know there is nearly always more or less of laceration of the ligaments about the joints, with usually quite extensive effusion of blood and serum into the tissues near the seat of injury. In these cases it is my habit to begin massage and passive motion as soon as the active inflammation begins to subside, always preceding the attempt at passive motion by smooth rubbing over the seat of injury, in this manner overcoming the irritability of the muscles and allowing of moderate movement of the joint. This plan, if persevered in, will insure the greatest degree of movement and subsequent usefulness.

Following an editorial in the *Medical World*, early in the present year, there have been several articles written on massage in the treat-

ment of various abnormalities, viz., in fractures and dislocations, in overcoming constipation, mechanical treatment in paralysis, massage in the treatment of sprains, and a short article on mechanical therapy and vibratory treatment. I have recently read the report of several cases of infantile paralysis cured by massage.

Wharton Hood, in his book, "The Treatment of Injuries by Friction and Movement," speaks at length and in great praise of early and persistent manipulation in fractures, dislocations, sprains and lacerated muscles, claiming that the theory of rest in these cases is wrong. He claims that they should be treated by manipulations at once, and, in the case of strains and lacerated muscles, the part be used all the time.

He says that in fracture of the neck of the femur in elderly persons, there should be no splints or restraining apparatus used, and that within a week the patient should be out of bed and begin to bear weight on the injured leg in a few more days. He adds that muscular exercise must be used freely, and that if proper care be taken of the muscles the injured bone will take care of itself.

In bruises and strains of muscles, use of liniments and embrocations, with thorough rubbing, makes a good treatment, a large part of the benefit derived being due to the rubbing. From the earliest times different forms of manual treatment for disease have been employed, and it has been claimed that the Swedish movement treatment is better adapted to all conditions than any other.

The aim of the Swedish movement treatment is by careful manipulation of muscles and joints to restore to health such as are in any way diseased; it consists of massage and various movements and postures. Ostrom defines the Swedish movements as a series of systematic exercises therapeutically applied to the human body. Every exercise, the direction and duration of which is fixed, is a "movement." The various movements are rotation, flexion and extension, separating and closing, bending, raising, pulling, turning, depression and elevation. Thus we see the principles used in calisthenics, gymnastics, physical culture, and in the once popular Delsarte movements. It is a well known fact that proper and systematic exercise of a muscle or group of muscles will greatly develop the part, and an intelligent use of Swedish movements would undoubtedly prove of marked benefit in subjects where there was lack of development.

In the current number of the *Medical World* is a paper by K. W. Ostrom, entitled "Massage in the Treatment of Chronic Headaches," which is well worth careful reading. It would be of advantage to us if we, as physicians, would lay aside our conservatism, and not depend wholly on internal medication, even though it be *specific*, but rather perfect ourselves in the technique of massage movements, and give our patients the benefit of this form of treatment, which has proved so successful where scientifically used.—Reprinted *in toto* from the *Eclectic Medical Journal*, Nov., 1910.

THE GALVANIC CURRENT.

BY J. K. HAMILTON, M. D., YOUNGSTOWN, O.

Galvanic electricity is said to have been discovered by an Italian named Galvani about the middle of the eighteenth century. It was shortly afterwards used to cause contractions of muscles in animals. Later it was used in the treatment of disease. Like all other therapeutic agents it has its limitations, falling much short of what has been claimed for it by some enthusiasts but still doing much more good than many who have not tried it are willing to acknowledge. I chose this subject because I believe it to be a valuable means of treating many cases that come to the general practitioner for help. It is a current that is in the reach of all whether located in the rural district or in the cities. The necessary apparatus for general work being obtainable at small initial cost, and the subsequent cost of upkeep is small. Dry cells are a satisfactory source of current or where the commercial current is obtainable, a motor generator or rectifier is generally preferred as being less bothersome.

The galvanic current of low voltage is a current of one direction; a current of low voltage; a current of different polar action; and a current capable of producing chemical changes in various substances. The most important thing to know and remember concerning the galvanic current is the effect produced at the different poles. Knowing this and knowing what particular case requires the application becomes as easy as making a homeopathic prescription, when the patient's symptoms and the symptomatology of the drug needed are known.

The positive pole is acid; hardens tissues; promotes the clotting of blood; coagulates albumin; liberates hydrogen; lessens inflammation; lessens nervous irritability; produces anemia; intensifies scars and strictures; decomposes all metals except gold, platinum, and aluminum and relieves pain. The negative pole is alkaline. It softens tissues, promotes dissolution of blood clots, inflammatory exudates, liberates oxygen, irritates the nerves, produces hyperemia, dissolves scars and strictures, and does not decompose any metal except aluminum.

This current is mostly used in subacute and chronic conditions. The three properties made use of in therapeutics are: catalysis; phoresis; electrolysis. The first named is common to all forms of electrification and my experience has been that the static form of electricity is preferable where this action is sought. By catalysis we mean the chemical and physical effects produced in tissues by the passing of electricity through or over them. It is probably the action of the electricity on the vaso motor system that produces the beneficial action.

By phoresis is meant that property of the constant current by virtue of which compound substances are drawn into the tissues of the living body. Thus we are able to secure the action of drugs on diseased tissues without attempting to send it to that particular spot via the alimentary tract. Phoresis is also properly applied to the action

pole. When substances are driven into the tissues from the positive pole it is called anaphoresis and when from the negative pole, cataphoresis. Cocaine, adrenalin, mercury bichloride, menthol, thymol, hamemalis and thuja are used on the positive pole, while sulphur, ichthyol, sodium and potassium iodide are applied to the negative electrode.

Electrolysis is the chemical decomposition of a compound body by electrification. This property like phoresis is peculiar to the galvanic current. Metal electrodes such as copper, zinc, tin, and platinum when attached to the proper pole and brought into contact with the moist mucous membranes are decomposed and the resulting salts driven into the tissues often aiding greatly in restoration of diseased parts to the normal condition.

I have found, in my practice, the following conditions to be wonderfully influenced by galvanism.

Chronic Gonorrhoea. If there are strictures in the urethra and these are not too ancient they can be absorbed by the use of the negative pole attached to sounds or preferably bougies of copper, using a large abdominal pad for the positive pole. Use more time than force and a weak current and long intervals. If there is no stricture I use a urethral electrode containing a strong solution of protargol or argyol to the negative pole and a copper rectal to the positive. I have had good results from this treatment in stubborn cases that have resisted other forms of treatment.

In gynecological cases we find the galvanic current often useful and curative in troublesome conditions where there are no gross pathological lesions. When such lesions exist it is clearly the part of wisdom to remove them if possible. However, there are many cases come to the physician for relief when surgical interference is refused or postponed. Many of these cases may be made more comfortable by the use of galvanism.

In dysmenorrhoea it accomplishes much in overcoming cervical stenosis and allaying chronic inflammation of the tubes and ovaries. In women suffering from the results of former attacks of inflammation of the genital organs where there is considerable inflammatory exudate interfering with the circulation and causing congestion and pain, much good can be accomplished by the intelligent use of this agent. When such a condition can be brought about, by means other than surgical, I think it preferable to do so. I have never attempted to electrocute extrauterine pregnancy, fibroids, or cure cancer by this agent, as I prefer the scalpel for these conditions.

In chronic articular rheumatism and gout this remedy is useful, carrying potassium to the afflicted points by phoresis. The infiltrate disappears, the joints resume their function and pain is relieved. The treatment to be beneficial requires time and patience. Constitutional treatment certainly should not be neglected at the same time. Enlarged glands from whatever cause except malignancy respond nicely to this line of treatment, providing, of course, they have not already broken down.

In dermatology we use this current for the removal of superfluous hairs and small facial blemishes such as warts, moles and small naevi.

The power of the positive pole to coagulate blood has been successfully proven in the treatment of aneurysm where ligature of the artery is contra-indicated.

In the use of the galvanic current a good milliampere-meter is necessary to indicate the strength of the current. My best results have been secured from the weaker currents for longer periods of time. In fact the consumption of time is the greatest obstacle to the employment of electric treatments of all kinds. A separate room for the treatments is the easiest solution of the problem.—Reprinted *in toto* from the *Cleveland Med. and Surg. Reporter*, June, 1910.

THE TREATMENT OF SCIATICA.

BY E. S. M'KEE, M. D., CINCINNATI, OHIO.

Hypodermic injections of sterilized air. First sterilize the immediate cutaneous surface, then insert a sterilized Pavas needle into the skin and connect with a thin rubber tube, which is again connected with a glass tube containing a bit of sterilized cotton, and then one drives, by means of a rubber balloon, the air slowly under the skin. Naturally, care must be taken that the Pavas needle is not run into a blood vessel, which easily occurs. Gentle massage should follow this procedure, till the air is all absorbed. The rest cure of Weir-Mitchell is in some cases very successful, especially in those whose means of livelihood has been an active one. Massage along the nerve, though quite painful, often breaks up the adhesions, which are the cause of the disease in many instances. In true neuritis, however, massage is not followed by good results. Massage, and especially mechanic vibrations, are of special worth in chronic cases with beginning atrophy.

Hydrotherapy, systematically used, deserves due consideration. The wet pack over night diminishes the pain remarkably, as well as having a favorable influence on the neurotic process. The next morning the leg is unpacked, washed with warm water, and massaged. Ten or twelve of these applications are usually sufficient. In subacute cases the half steam bath is of service. Patient lies in a steam container which reaches only above the hips. The half steam bath does not weaken the patient and allows of a higher temperature; 44 degrees C. can be endured for ten or fifteen minutes without discomfort. Afterwards the patient is put in a bath of 35 degrees C. for eight minutes and the diseased hips touched with water at 40 degrees to 44 degrees C. This procedure can also be combined with swimming baths. Very often the drinking of large quantities of water is advisable.

Electrotherapy—Galvanic current direct on the nerves, four to eight minutes, highest three to five milliamperes. Also, the interrupted galvanic current stimulates the muscles in a mild way, holds the tissues in a good condition and prevents atrophy. The static (Franklyn) douche, with positive pole on the painful part, is followed by good results. The apparent anodyne action of faradism in sciatica is due to its alternate action on the muscular tissue, and through that on the circulation. The current dare not be increased to painfulness.—“The Monthly Brief” in *The Medical Brief*, August, 1910.

CONCLUSIONS ON EPITHELIOMA TREATMENT WITH SOLIDIFIED CARBON DIOXID.*

BY RALPH BERNSTEIN, M. D., PHILADELPHIA, PA.

In a very interesting paper the author gives his conclusions regarding numerous epitheliomata successfully treated with solid carbon dioxid. Dr. Bernstein says, in part, as follows: "It is my belief that every mole, wart, or angioma, should be considered a potential cancer, especially where there is inherent propensity for malignancy; whether this statement can be accepted in its entirety matters little as long as the physician will take it upon himself to see that such growths are removed in their earliest incipency. For then will it be possible to prevent cancer in its true picture."

Any existing constantly inflamed area in the aged showing evidences of degenerative changes, or even without that evidence, should always be looked upon with suspicion as being cancerous. It certainly must be born in mind that the clinical pictures of skin cancers certainly included a large number of types which are not generally recognized as belonging to any particular group, but are sometimes mistaken for the infective granulomata and other skin diseases.

The clinical pictures of epithelioma are usually sufficient to enable the expert to make a diagnosis on them alone; but the safest course to pursue in nearly all cases is to confirm that diagnosis by microscopic examination.

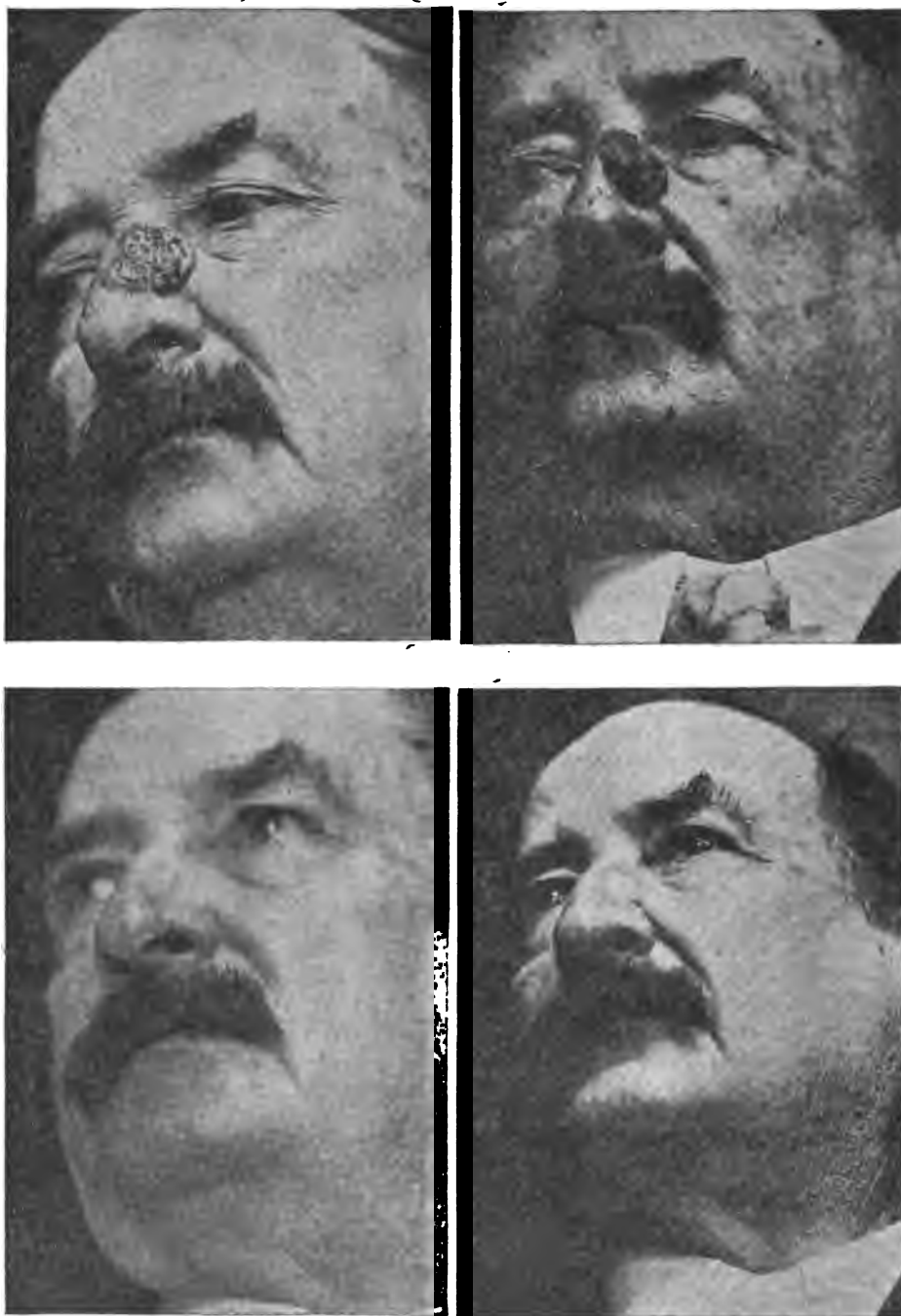
Regarding the successful treatment of epithelioma, I shall limit myself absolutely to their treatment with solidified carbon dioxid, giving the experience of numerous cases treated during the past three years in my own private as well as clinical practice, in which there have been no failures in the hundreds of cases treated, the percentage of cures still remaining one hundred.

Solidified carbon dioxid offers a practically painless method of procedure, is comparatively short in its duration in comparison with other methods of treatment, the operator always having the action of this chemical agent at his minute control, being always able to regulate the depth of his freezing by the pressure exerted and the time consumed.

Solidified carbon dioxid seems to have the happy faculty of permitting epithelium to regenerate so that scarring is usually absent. If any scarring is at all to be found it is usually very superficial and pliable; the result being either a normal epithelial covering of flesh color or perhaps a slightly whitened area at the site of the previous lesion. This is not the rule when caustics or other agents of a destructive nature are used, marked or unsightly scarring is the usual result.

That we have in solidified carbon dioxid a most efficient agent for the treatment of epithelioma cannot at this time be denied for the universal opinion of those who have investigated its use in that line of work seems to be unanimous—some having had but little experience

*A paper read before the Pennsylvania Homeopathic State Medical Society.



Results in the treatment of an ulcerating Epithelioma of one year's duration. Treated with various topical applications without improvement. 1. Before treatment. 2. Typical scabbing. 3. Shedding of final scab showing slightly depressed, smooth white area. 4. Showing gradual disappearance of scar, with pinkish epithelial covering. (Bernstein.)

in few cases and others having a greater experience. Freezing is an old therapeutic measure which has been tried in many ways. The action of carbon dioxid upon the cancerous tissue depends, of course, entirely on its ability to immediately freeze the part, producing as it were, a dry form of gangrene which nature takes care of and in a short space of time, absorbs, causing the cancerous growth or any other neoplasm to disappear entirely.

Solidified carbon dioxid usually freezes well beyond the area to which the frozen mass is applied so that one is usually always sure of being able to treat well beyond the affected parts.

Immediately upon applying solidified carbon dioxid to the cancerous tissue it takes on an appearance of white ice quite similar to that of solidified carbon dioxid itself. Within a short time after freezing a wheal-like eruption presents itself, characterized by a slight eruption or bleeding, which soon forms into a crust, which usually happens within 24 hours. The crust usually remains for from ten days to three and sometimes four weeks; one crust which I recall upon a rodent ulcer remaining for six weeks, then falling off leaving a smooth, white, scarless area.

Occasionally there may be a slight scarring which always seems, however, to have a tendency to gradually disappear. It can most certainly be said that the resulting scars, if any left by the freezing process, are usually pliable and from a cosmetic standpoint are most certainly more beautiful than those left from any other agent used for a similar purpose.

Occasionally, when working about the orbit of the eye, there is intense reaction following with marked swelling, usually closing the eye. This, however, has been perfectly harmless and usually disappeared within the course of 24 hours.

Regarding pain, the rule has been that the patient is unable to determine whether the sensation is one of pain or of extreme cold or heat. In the majority of cases the patient has stated positively that he suffered no pain, simply a slight stinging or burning sensation.

In conclusion Dr. Bernstein cited a series of 14 cases which will give a general idea of the results obtained and are similar to the hundreds of other cases treated.—Reprinted from *The Hahnemannian Monthly*, October, 1910.

MASSAGE.

BY CARL SANDZEN, A. M., PH. D., M. D., KANSAS CITY.

Professor of Physical Therapeutics, University of Kansas Medical School.

Notwithstanding that massage has been used as a curative agent for thousands of years, very few physicians possess sufficient therapeutical and practical knowledge of the same to properly employ it. The general impression, even among the medical profession, has been that massage requires neither experience nor knowledge, but purely physical strength. I desire to emphasize the truth that anyone who uses this agent without knowledge of anatomy and physiology and

proper diagnostic ability does just as much harm as an unskilled surgeon. None but a physician or masseur who is well prepared to use this powerful therapeutic measure should ever be allowed to manipulate the human body. The harm done by incompetent masseurs and masseuses should be forever stopped.

While massage has been in use for thousands of years by civilized and uncivilized people, it is but fifty years since its real value began to be understood by a few physicians in Sweden and Germany, and since that time it has steadily grown in recognition as a powerful curative agent.

The physical action of massage so far as known from my own experience and that of others is first observed upon the skin. In a mechanical way it removes more or less of the most superficial epidermis cells, and increases at the same time the permeability of the skin, the so-called *perspiratio insensibilis*. This action can be modified by the dosage of fat used in the manipulations.

Pathological adhesions of the skin are loosened and products of a traumatic or inflammatory nature are through morphological changes made more easily absorbable.

If the hand is allowed to hang down at the side for a few moments it will be noticed that the visible veins are distended with blood. By light centripetal strokes of the palm the amount of blood in the vessels can be lessened until there is a slight furrow instead of the previous elevation of the distended vein. By following the main and branches of the vein it can be emptied by negative pressure through suction. The same effect can be produced upon the lymphatic vessels. The fluid is driven centripetally, and the vessels are filled centrifugally. The rapidity of the blood current can thus be increased by massage. This has been proved by experiments. That is, by counting the red and white blood corpuscles before and after massage. This is explained by the pumping in of corpuscles from the smaller blood vessels into the larger. It has been proved that we lessen the activity of fluid in serous cavities, as the abdominal cavity, joints, etc., through massage, by means of interstitial absorption into the lymphatic ducts.

That massage has a very powerful influence upon the muscles can be proved by the following experiment: Have a man lift a weight of two pounds, for instance, up to his shoulder as many times as possible. When he becomes totally tired out, let him rest fifteen minutes, and then begin anew. During the second attempt there will be considerable decrease of power and endurance. He would not lift the weight nearly so many times as before. Massage his arm for five minutes, and he will be able to repeat his first performance.

Mechanical irritation has some influence on unstriated muscles, wherefore we get good results in massage in cases of atony of the stomach, intestines and insufficient sphincters.

The influence of mechanical irritation on the nerves might be best expressed in the so-called Pflüger's law: "Weak irritation increases the irritability of the nerves; medium, benefits the same; strong, decreases, and very strong, stops the irritability."

Under the same law from the so-called vibratory massage, the influence of massage of a small or greater part of the body is espe-

cially confined to the general assimilation and blood pressure. The increase of rapidity of the circulation, which stimulates the cells to energetic activity, favors a rapid assimilation, explains the increased secretion of urea during and after massage. Experiments have shown that such manipulation in the first place acts upon the skin, little friction, little kneading and little vibration increase the blood pressure. On the other hand, more powerful deep massage decreases the same. The possibility of increasing the heart action by massage movements, especially blows and shocking, either over the site of the heart or the whole body, is now a recognized fact, even if there is some uncertainty about the *way*, that is, as to whether it is through reflex action upon the tenth nerve or through more direct action upon the heart itself.

The temperature of the body is increased on the surface and lowered in the rectum by massage of the limbs and back. Abdominal massage has the opposite effect. The mechanical action of massage and its effect upon absorption and circulation make it especially useful in affections of the arms and legs, in muscular atrophies, myocytes, rheumatic complications, subacute and chronic tendo-vaginitis; after treatment of skin lesions and X-ray burns, to prevent disfigurement from contraction of scar tissue; neuritis, neuralgias, joint affections, as dislocations, after-treatment of luxations, synovitis, etc.

Orthopedics is another great field for massage in connection with spinal deformities.

All internal diseases, functional disturbances of the stomach and intestines are benefited by massage; especially is this true of colon inactivity, but even in atony of the stomach we get good results.

By its powerful increase of absorption, its mechanical action in breaking up adhesions and converting dislocations, massage has given good results in gynecology. Enuresis, due to insufficiency of the sphincter vesicle has lately been treated with great success by massage.

It is not my intention to classify all diseases wherein massage may be employed to advantage. Its use may be better illustrated by a short description of the various movements employed. We usually divide massage into four special divisions: 1. Effleurage. 2. Friction. 3. Petrisage. 4. Tapotement.

Effleurage consists of centrifugal strokes of varying strength over a comparatively large surface, usually with one hand. It is the form of massage most frequently employed. Its purpose is to increase the rapidity of the current in the blood and lymph cells. It is, therefore, mostly used on those parts of the body rich in these vessels, for instances, the neck and extremities.

Frictions, as the name implies, are strokes with the hand in circles over small surfaces, one at a time, under more or less pressure; employed in hastening the regressive metamorphoses in exudations and infiltrations of the inflammatory products of the lymph vessels. The amount of pressure is the most important feature, and tests the operator's knowledge and skill.

Petrisage is a movement in which the operator seizes the part of the tissues to be worked upon between the thumb and fingers of one or both hands, and then kneads or pinches them thoroughly. In

operating on large masses of muscles, *e. g.*, the arm or leg, a hand can be placed on either side, and the muscles kneaded. The action of petrisage is about the same as from frictions, at the same time partakes of that of the tapotement. Mechanical irritation to the muscles which contract from a kneading or pinching, just as from a blow on the affected place.

Tapotement consists of a series of manipulations more or less in the nature of a blow. The muscles are most influenced by blows across the long axis. The movement is given usually with the ulnar side of the hand for the muscles, with the flat hand for the skin and nerves. On nerve trunks we usually give tapotement with the finger ends in percussion. Under tapotement is classified vibratory massage which, at present, is a valuable addition to the physician's armamentarium.

Worries only serve to enhance
the value of contentment.

* * *

In one generation an institution is unassailable, in the next bold men assail it, and in the third bold men defend it.—The Times (London).

* * *

Not nations, not armies, have advanced the race; but here and there, in the course of the ages an individual has stood up and cast his shadow over the world.—Chapin.

* * *

Fear of open discussion implies feebleness of inward conviction, and great sensitiveness to the expression of individual opinion is a mark of weakness. — Oliver Wendell Holmes.

* * *

It is singular how long the rotten will hold together, provided you do not handle it roughly. For whole generations it continues standing, with a ghastly affectation of life, after all life and truth has fled out of it. So loth are men to quit their old ways, and, conquering indolence and inertia, venture on new.—Carlyle.

BOOK REVIEWS

RONTGEN RAYS AND ELECTRO-THERAPEUTICS with Chapters on Radium and Phototherapy. By the late Mihran Kassabian, M. D. Second edition. 1910. 540 pages and 245 illustrations. J. B. Lippincott Co., Philadelphia. Cloth, \$4.00 net.

The profession knows of the recent death of Dr. Kassabian, from exposure to X-rays. Few men have erected a more noble monument to their own memory than has this distinguished student, investigator and author. Due respect to so great a man requires, not a eulogy, but a candid criticism of his book. About one quarter of the work is devoted to a very brief treatment of the general principles of electricity and of electro-therapeutics and diagnosis, including about 20 pages for the high frequency current now so much in vogue. Obviously, a scientific grounding in electricity is taken for granted, though it is surprising how well he reviews the points most likely to be forgotten and how he condenses a mass of practical details about each piece of apparatus and still manages to make clear the underlying principles.

The use of the X-rays is still so much a matter of individual experience and technic, that the time is not ripe for the preparation of a text book of any degree of permanency nor for passing final judgment on many disputed claims. Thus, in spite of the large amount of space devoted to this subject, many of the more remarkable reports on abdominal diagnosis are lacking. In common with most American writers, the author pays little attention to the fluoroscope which, in our opinion, is of much importance for the occasional user of the X-rays and whose value and relative safety have been demonstrated by Béclère of Paris.

Mechanically considered, the book is well prepared, except that many of the illustrations, though good enough for practical purposes, are far below the standard attained by several publishers, including the J. B. Lippincott Co. in other works. Speaking generally, the skiagrams are mediocre. Perhaps on this account, they are all the better as indicating what the average X-ray operator can expect to accomplish himself. Certainly the charge sometimes made that some specialists secure their wonderfully clear and detailed pictures by re-touching negatives, cannot be made here.

These criticisms are consistent with high praise of the work as a whole. It is easily the best and most practical book covering this field of diagnostics and therapeutics that has yet appeared. In conclusion, we express the hope that the passing of Dr. Kassabian, from a specialty whose literature must necessarily be frequently revised and extended, will not remove his name from standard medical literature, but that his foundation will be built upon by subsequent editors who will retain his name.

BENEDICT.

NEVER-TOLD TALES. By William J. Robinson, M. D., New York City. Editor, *American Journal of Urology, Medical Review of Reviews, Critic and Guide* and *Therapeutic Medicine*. Third edition, 12-mo. 155 pages. New York: The Altrurians, 12 Mt. Morris Pk. W. Cloth, \$1.00 net.

Here is a book which deserves much praise and commendation. It is published with the hope of saving some from the never-ending misery resulting from ignorance. The fact that within less than two years three large editions have been called for shows that the book has been appreciated. It has done much good, and why and how this good has been accomplished will be quickly seen by those taking the trouble to read it through.

As the author says: "No book has a right to exist that has not for its purpose the betterment of mankind, by affording either useful instruction or healthful recreation." Surely the instruction given in this book has proved itself decidedly of the useful type. We recommend it most heartily to our readers.

THE PRACTITIONER'S CASE BOOK. For Recording and Preserving Clinical Histories. Prepared and Arranged by the Editorial Staff of the *Interstate Medical Journal*. Imperial octavo; 286 pages; full cloth binding. Printed on bond writing-paper. With 80 colored anatomical charts (detachable), showing outlines of body and skeleton in light red and the viscera in pale blue. Index for listing patients both by name and case number. St. Louis: Interstate Medical Journal Co. 1910. Price, postpaid, \$2.00.

One of the most useful record books we have seen. It saves time and bother, and would be, we confidently believe, a valuable addition to the desk-equipment of the up-to-date physician. It contains many helpful suggestions, charts, and unfilled blanks which facilitate in a decided degree the case and history taking.

ESSAYS ON LABORATORY DIAGNOSIS FOR THE GENERAL PRACTITIONER. By Henry R. Harrower, M. D., Professor of Clinical Diagnosis, Medical Department of Loyola University, Chicago. 282 pages. New Medicine Publishing Co., 72 Madison St., Chicago. Cloth, \$2.00 net.

Here is a book the contents of which have been published before, and are now republished in book form "by special request". We really believe that there will be an immediate and wide-spread demand for this little volume, simply because the subject is not as thoroughly appreciated by the profession as its importance warrants, and the special points brought out and emphasized by Doctor Harrower are of "prime importance to every physician".

The fact that the book is a compilation of papers written during the past few years and published in various medical journals instead of being a hindrance to the book will, we believe, be a distinct help. Many of those who have read isolated articles and profited by them can now find here some 27 live, practical essays on matters which we have failed to find in the text-books of the day.

Much emphasis—some seven chapters—has been laid on the influence of systemic hypo-alkalinity or acidemia, as it is called. Personal experience has taught the reviewer that there is much more to this than we have thought, and a number of encouraging results of the appreciation of the importance of this factor have convinced us of its real importance.

There is one thing that we cannot refrain from calling attention to—the author does not mince words. His statements are exceedingly straightforward and to the point. One fault which we find is that there are frequent repetitions throughout the book; the author himself has recognized this and alludes to it in his preface as follows: "I am conscious of many shortcomings, the principal among them being frequent repetition. I hope these will be overlooked. One correspondent explained away this excuse of mine for postponing publication of the book by saying: 'You know that the truth can stand a whole lot of repeating.'"

We believe it. The book is a good one, it is sadly needed and because of this we predict for it a ready sale and many editions.

EBERHART.

MALPRACTICE CASES. By Martin J. Wade. Former Judge of the Eighth Judicial District of Iowa; Professor of Medical Jurisprudence in the College of Medicine, and Lecturer in the College of Law, State University of Iowa. Law size, 900 pages. Buckram. R. T. Fiske, publisher, Iowa City, Iowa. Price, \$5.00.

This is certainly a timely book which should be in the hands of every physician and surgeon. Judge Wade has been head counsel for the Iowa State Medical Society for many years and this work was originally compiled for its members.

Among many pertinent questions answered, are whether the physician is liable in damages for refusing to answer a call; failing to make a correct diagnosis; carrying an infectious disease to a patient; failing to give necessary instructions; abandoning a patient; making an error in writing a prescription; for treatment which is a departure from approved methods; for the act of his partner or his agent (nurse); etc.

These are practical questions that come home to each and every one of us. Especially are those using the X-ray apt to be the objects of malpractice suits, and this is thoroughly considered as are possible suits arising from various medical and surgical procedures.

We cannot say too much in commendation of this valuable book and bespeak for it a wide sale.

EBERHART.

HANDBOOK OF ELECTRO-THERAPEUTICS. By William J. Dugan, M. D., Lecturer on Electro-therapeutics in Jefferson Medical College, Philadelphia; Physician-in-Charge of Electro-Therapeutic Department, Jefferson Hospital; Fellow of the American Electro-therapeutic Association, etc. 242 pages; illustrated. F. A. Davis Company, Philadelphia, Pa. 1910. Cloth, \$2.00 net.

This is a working manual of Electro-therapeutics for the student. It is fairly clear and modern. Special attention is paid to the explanation of what electrical apparatus to select and how to use it after it is purchased.

The chapter on treatment by magnetism is a novelty, nothing of the kind never having previously appeared in any work on this subject. This chapter shows the close relation existing between electricity and magnetism.

The work may be recommended as an elementary book on a subject on which, fortunately, there are many good books.

AMONG THE JOURNALS.

The Editor feels that the department devoted to literature is not complete when space is given to book reviews alone. The function of this journal is to help its readers and at times there is a need for mention of specially interesting facts concerning our contemporaries. With this issue, therefore, a department with the above title will be started.

* * *

The first number of the *American Journal of Diseases of Children*, the new monthly periodical to be published by the American Medical Association, will appear in January, 1911. This journal is established at the request of a large number of the leading pediatricians of the country. At the St. Louis session, the Board of Trustees recommended to the House of Delegates that such a journal be established and the recommendation was adopted.

The journal will be, of course, of a high order, and the articles presented will be creditable to American pediatrics. The interests of the general practitioner are to be kept especially in view, inasmuch as the treatment of children forms a large portion of his work. The more technical articles of the specialist and the research worker of course will have the prominent place in the journal. Among the contributors to the first number will be Abt, Bevan, Dunn, Fetterolf, Gittings, Hamill and Blackfan, and Jacobi will write an introductory editorial. In addition, there will be comments on live topics in pediatrics, as well as abstracts of current pediatric literature by pediatricists who know what is of real interest. (\$3.00 a year. American Medical Association, 535 Dearborn Ave., Chicago.)

The January issue of the *American Journal of Surgery* (\$1.00 a year; 92 William street, New York City), will be a special Southern number composed entirely of original contributions from the pens of well known Southern surgeons. Among a splendid list of a dozen or more titles we note such contributors as Dr. Howard A. Kelly of Baltimore, Dr. Stuart McGuire of Richmond, Va., Dr. Willis Westmoreland of Atlanta, Ga., and Dr. C. S. Venable of San Antonio, Texas. We are confident that this issue will be a worthy beginning of the New Year.

* * *

Doctor C. W. Lillie, who is at present publishing *The General Practitioner*, is planning to merge his journal with *The Medical Era*, and the first number of the consolidation will appear January 1. This will be made more than ever a journal of office practice and thus especially interesting to our readers. (\$1.00 a year; 834 N. Grand Ave., St. Louis, Mo.)

* * *

Doctor J. D. Albright of Philadelphia has sold *The Office Practitioner* and we learn that it is shortly to appear in new form and monthly instead of quarterly. We regret that the Doctor is too busy with his practice to continue his editorial work; but are sure that his several splendid books will keep his name well before the reading medical public. This journal will continue as *The Physician's Drug News*, and *The Office Practitioner*, and will be under the editorial care of Mr. B. L. Maltbie. (\$1.00 a year; 250 High Street, Newark, N. J.).

* * *

We hear from Doctor C. W. Fassett that *The Medical Herald* will combine with the *Kansas City Medical Index-Lancet*, retaining the shorter and more convenient title. Doctor Fassett's editorial headquarters will be removed from St. Joseph, Mo., to Gloyd Bldg., Kansas City, Mo., and he is going to give his readers a surprise this coming year.

* * *

The Physician's Business Journal is still being published and is better than ever. Doctor Thatcher has secured the editorial assistance of some of the best men in this country and we wish him a large measure of success. We cordially recommend our readers to subscribe. (\$1.00 a year; 407 Bulletin Bldg., Philadelphia, Pa.).

* * *

We were recently in Saint Louis and learned from Doctor Otho F. Ball that the *Interstate Medical Journal* had the "special number fever" too. The January issue will be larger and better than usual (if this is possible), and will be devoted especially to Syphilis. In an advanced program we saw Doctor Osler's name and noticed a fine article by Dr. Hideyo Noguchi and an exhaustive article by Doctor Ehrlich's assistant at Frankfort A/M on the new "606." Practically every phase of the newer methods of the diagnosis and treatment of syphilis—and in no disease have so great strides been made as in

the past two years—is to be discussed and the journal will be one to read and refer to. (\$2.00 a year; Metropolitan Bldg., St. Louis, Mo.).

* * *

Following a custom which has been carried out for a number of years Doctor Abbott will begin the year by publishing a special progress number of the *American Journal of Clinical Medicine*. We are anxious to see this number to find out how it can possibly be any better than previous issues. We will not be overstating matters by suggesting that it will be one of the finest pieces of medical journalism printed—get a copy. (\$2.00 a year; 4755 E. Ravenswood Park, Chicago.)

* * *

Beginning with the January number two more journals will be merged and published under the name of *The American Medical Compend* (\$1.00 per annum; 2013 Cherry Street, Toledo, Ohio), continuing *The Toledo Medical and Surgical Reporter*, established in 1874, and the *American Medical Compend*, established in 1884. The best features of both journals will be retained and a number of new features have been planned and will be added in the near future.

* * *

The *Montreal Medical Journal* ceased publication December, 1910, and has been merged into the *Canadian Medical Journal*. The first of the combined journals appears this month and will be under the editorial management of Dr. Andrew MacPhail, Montreal, P. Q.

* * *

The spirit of merging medical journals is evidently in the air. No less than five mergers are referred to here, and a sixth, of especial importance to all those interested in Physiologic Therapeutics, was consummated a few weeks ago. *The Journal of Physical Therapy*, of Boston, Mass., has been consolidated with PHYSIOLOGIC THERAPEUTICS. An arrangement has been made which it is hoped will be satisfactory to subscribers to the Eastern journal. The enlarged journal will keep on growing, and the Managing Editor respectfully asks *your* co-operation.

Eloquent speech is not from lip
to ear, but rather from heart to
heart.

* * *

Don't waste sympathy on your-
self.. If you are a gem, some one
will find you. Don't whine. Tell
people you are a failure and they
will believe you. Talk and act like
a winner, and in time you will
become one.—Stephen Harte.

CORRESPONDENCE

High Amperage in Static Work.

In the November issue of *PHYSIOLOGIC THERAPEUTICS* (page 249) a statement was made that the static machine was capable of producing from 1,200 to 1,800 ma. of current. A correspondent immediately wrote in and called attention to "a typographic error or a blunder made by some one." This was referred to the author of the statement in question with the following interesting answer:

November 21, 1910.

TO THE EDITOR:

We have your letter of November 17th regarding the error, or as you mention "the blunder made by someone."

We know that to pass 1,200 to 1,800 milli-amperes through a patient is inconceivable to men who are only familiar with the old style, small output apparatus and this is further evidenced by the fact that they do not seem to understand that with so-called high frequency type of connection, especially auto-condensation, there is a ratio of transformation. For instance, a machine which generates 5 or 6 milli-amperes, direct current, generates this volume at a very high voltage and when leyden jars are added, together with suitable inductance, and current is allowed to oscillate or pulsate there is a ratio of transformation, the voltage is reduced and the current increased.

I will again repeat that current of from 1,200 to 1,800 milli-amperes is perfectly possible and in fact is being used every day in connection with our large output machines. It is so common, in fact, that the users now express this current in amperes, not milli-amperes. For instance, in thermo-penetration the current will run from .8 to 1½ amperes and it is common to hear a physician state, "On this or that case I used an ampere of current." To speak of this dose being fatal, we would refer any one who believes this to the works of Tesla or other men who have done a lot of work in high frequency. These high frequency currents do not possess the dangerous element that direct current does; in fact more than 1,800 milli-amperes may be passed through the body, if the frequency is sufficiently high, without causing damage.—The Baker Electric Co., Burton E. Baker, secretary, Hartford, Conn.

The Treatment of X-Ray Burns.

November 12, 1910.

TO THE EDITOR:

After reading Dr. Scott's valuable paper in your last issue I cannot help suggesting the following, which has been so successful in my hands in treating the untoward action of the X-ray. Practically all medication applied locally makes bad worse. All drugs which are irritant to the skin must be avoided. The most useful are the application of pure vaseline and the wash of bicarbonate of soda. I avoid bandaging and place these patients in front of the Finsen light twice

daily. I have never seen an untoward action of the X-ray that I was unable to give relief in less than two weeks. As far as the application of drugs is concerned, the worst that can be applied are carbolic acid or lead solutions. Those that have no effect are peroxide of hydrogen or weak boracic acid. The pain, while it is covered, to a great extent by pure white vaseline, is entirely gone after the second or third twenty-minute exposure to the Finsen light. As far as drugs are concerned, I have relied on vaseline and the bicarbonate of soda solution for over three years and the only addition that I made since is the use of the ultra violet light. The above treatment is entirely satisfactory to me and I hope it will be equally serviceable to your readers.—W. H. Mick, Omaha, Neb.

Standardizing Apparatus.

November 30, 1910.

TO THE EDITOR:

What a splendid opportunity you have of making a great success of your journal, that is, provided you make it an unbiased liberal organ uninfluenced by any school of electro-therapeutics or by any manufacturer. At the present time, to the best of my belief, there is no school giving practical instruction in electro-therapeutics. You, however, can supply this want through your journal by making it a medium for the dissemination of much needed information as to the use of electrical apparatus in the practice of medicine.

In your last number, under the head of "Correspondence," I note references to the static machine and high frequency current. It scarcely seemed to me that the matter was made very clear. I was wondering how it would be to formulate a set of questions to be answered by those having the knowledge and experience enabling them to speak with authority. By this means I think we might be able to bring out much that would be of interest and profit to those of the medical profession interested in electro-therapeutics. As you are aware, much electrical apparatus is often thrown aside as worthless, and while some of it may really be worthless, being of poor construction, still, much of it is perfectly good and is cast aside through lack of knowledge as to its use and care. The only way in which it will be possible to arrive at a standard, say for instance in the matter of static machines, will be to obtain reports from different physicians who use the machine, that is, as to the type of machine used, the number of plates, the number of revolutions, which poles are used, and what results are obtained. In this way we will be able to ascertain whether it is necessary to have high speed machines or a large number of plates, and readers of your paper will thus gain an actual working knowledge based on practical experience.

I would like very much to see these matters taken up in detail on a fair basis and when the best type of apparatus is decided upon as to size and construction, all manufacturers will be compelled to make apparatus of the type demanded by the medical profession and

proven to be the best and most efficacious. Then, and not until then, will we have uniform results and rapid advancement in electrotherapeutics.—Fraternally yours, Henry E. Waite, New York City.

A Course in Non-Medicinal Methods.

Chicago, December 11, 1910.

TO THE EDITOR:

In the November issue of your valued journal, I notice a copy of a clipping from the *Philadelphia North American*, entitled: "A New Course at Temple University," in which Doctor Taylor is quoted as making the statement that his course on non-pharmaceutical therapeutics is "the first course of its kind which has ever been established." Partly for historic reason, and partly because you seem to take interest in the matter, I would like to call your attention to the fact that a course on non-medicinal therapeutics has been given at the College of Physicians and Surgeons of Chicago since the year 1903-04.

The following statement taken from the "Annual Announcement of the College of Physicians and Surgeons," that will show you the nature of the work:

Course, B—Non-Medicinal Therapeutics, including Hydrotherapy, Electrotherapy, Mechanotherapy, Dietetics, Climatology, two hours a week, 72 hours. Laboratory work in Mechanotherapy, one hour a week for four weeks. Laboratory work in Electrotherapy, one hour a week for four weeks. Laboratory work in Hydrotherapy, one hour a week for four weeks.

I desire to take this occasion to express my appreciation of the value of your journal, and wish that its success may be commensurate with its merit.—Very truly yours, Bernard Fantus, M. D.

It requires many smiles to dissipate the effects of one frown.

* * *

Many an opportunity gets away from a man while he is busy worrying about the future.

* * *

We are weaving character every day, and the way to weave the best character is to be kind.

* * *

To lose is not so deplorable as to profit by one's loss.. The only man who never loses is he who never ventures. All great successes are built upon past losses.

QUERIES

High Frequency Current—Interrupters—Diathermy.

(1) In Dr. Strong's work, "High Frequency Currents" (page 85), published some two years ago, he makes this statement: "The therapeutic action of the currents of the Tesla type is superior to, and more efficient than that of the D'Arsonval current or of the resonator delivery."

Is it a fact that a dosage, say, of 800 ma. in auto condensation taken from a D'Arsonval solenoid in series, with a static machine or generator is less profound in its physiologic effect than the same amperage derived from a shunt from a Tesla coil?

(2) Why will not the current from a solenoid properly excite an X-ray tube?

(3) Does an alternated current after passing through a mechanical interrupter become an absolutely unidirectional one?

(4) Does the H. F. C. hot wire milliammeter register electrical current or heat translated into electrical nomenclature and if the latter, is it not more of a thermostatical than an electrical instrument?

(5) Is there made and sold in this country a generator of the Von Lapell type suitable for diathermy?—E. L. D., New York.

(1) We have noticed that Dr. Strong, in his book, evidently prefers the Tesla to the D'Arsonval or to the resonator current: We are of the opinion that with the same generating apparatus, whether the Tesla coil or the D'Arsonval solenoid is employed, the therapeutic value is essentially the same, with the same number of milliamperes of current in the patient's circuit.

(2) A high frequency X-ray tube will be excited by a solenoid if the generating apparatus back of it produces sufficient voltage, or if there are a sufficient number of turns of wire in the solenoid.

(3) The action of an interrupter on the alternating current is to cut out the negative wave so that the current is left as a succession of positive waves, with a very short period of time between them so as to practically leave a uni-directional continuous current so far as all practical purposes are concerned, and yet this current is not, and cannot be called a direct or continuous current.

(4) The hot wire milliammeter registers the amount of heat produced by the high frequency current and the needle is deflected by the expansion of wire when thus heated. Strictly speaking it would be quite as much a thermostat as an electrical instrument.

(5) We do not know of any American manufacturer making the apparatus you mention.

Light Therapy.

November 30, 1910.

I would like to see a discussion of the relative merits (and demerits) of the various forms of light therapy and the apparatus now on the market.—W. O. H., Fort Wayne, Ind.

This might be a very interesting discussion, although it might become somewhat personal. Perhaps some of our readers have some ideas they want to tell here.

Incidentally, a very interesting symposium collected by Dr. J. A. Burnett, and entitled, "An Inquiry as to the Curative Value of Therapeutic Lamps," appeared in *The Kansas City Medical Record* for November, 1910, pages 325-331. It is too long to be reprinted here and cannot well be shortened.

An Intensifying Screen.

October 20, 1910.

I recently heard that by the use of some sort of a screen one could obtain splendid X-ray pictures when without this appliance they are only fair. What is this and how does it work?—Gustav Staats, M. D., Chicago.

We again have to confess ignorance; but it did not take us long to find out. We soon learned that this screen is a recent German invention which has just been introduced into this country by the Kny-Scheerer Co., of New York. A letter of inquiry to Mr. Winter, the accommodating head of the radiographic department brought the following response, which probably answers your question:

"Referring to the 'Sinegran' intensifying screens we are now marketing, these actually reduce the time of exposure one-quarter to one-tenth the time needed to make a fully timed negative without it. The negatives show practically no mottling and for smaller apparatus or heavy subjects even with large apparatus the screen is a necessity. There is a further advantage if one will figure the saving of the X-ray tubes; they practically reduce the tube-bills to one-quarter if not more.

"The principle of the screen is that it fluoresces purple, and the emulsion on the plate is more sensitive to purple light than to the X-light; the time is consequently reduced as above stated."

Reducing Tube Expense.

Is there any way that one can eliminate the most frequent cause of punctured tubes and thus diminish this heavy expense?—H. M. E., Chicago.

Punctured tubes and punctured anodes are undoubtedly due to heat and inverse currents more frequently than any other cause. This can be entirely eliminated by the use of the Triple Valve Tube, recently placed on the market by the Scheidel-Western X-ray Coil Co. These tubes will reduce operating expense very materially.

To be able to dissipate ones
misfortunes and conserve ones
pleasures constitutes the joy of
living.—J. W. M.

THE EDITOR'S PERSONAL PAGES.

At last it is finished, and it was the biggest job I ever tackled. If it had not been for many encouraging words I am afraid that you would never have seen this 192-page journal. I must make a place here for a hearty acknowledgement of the courtesies shown me by hundreds of readers in sending me names of friends to whom a copy of this special number might be sent. Thanks are also due those gentlemen who have contributed their share in making this the biggest, and I hope the best, journal of its kind ever published. With my thanks come my best wishes for a happy and prosperous New Year.

* * * *

There have been 7,500 copies of this issue printed, 1,000 of which constitute the "Over-Seas Edition." They have been sent to every corner of the earth and I hope that they may open up in good condition and prove thoroughly interesting reading to those receiving them. One of my good friends in England sent me a list of the members of the Electro-Therapeutical and the Balneological and Climatological sections of the Royal Society of Medicine with the suggestion that amongst them might be found many subscribers to *PHYSIOLOGIC THERAPEUTICS*, I am sending a copy to every one, and hope many of them will want to see the special Hypertension number which I have in preparation, and of which announcement has been made on page i.

* * * *

Incidentally this Hypertension number is going to be as much out of the common as I have tried to make every preceding issue of *PHYSIOLOGIC THERAPEUTICS*. You will see that I have an excellent program planned, and by reading the journal you will realize what an immensely important place the non-medicinal methods have achieved in the treatment of the condition due to or associated with an excessive blood pressure. I may be pardoned, I trust, for hoping that you will mention this issue to several of your friends and suggest to them that they get a copy and begin their subscription with it.

* * * *

Since the publication of the last issue several gentlemen who were especially interested in sanatorium and treatment-room work have sent in lists of names of professional friends in their respective cities with a check and the order to send them *PHYSIOLOGIC THERAPEUTICS* for a year. Of Course, I appreciate this very much indeed, and hope that the investment made may be a good one and that the increased interest in the physiologic methods of treatment may cause these new readers to more thoroughly appreciate the special equipment that these subscription-donors have at their disposal. Candidly, I believe that these progressive doctors will be well repaid, and I shall not be lax in trying to assist them.

* * * *

I have a very important and personal request to make to *you*. I want to whisper a few things into your ear, and by so doing gain your

co-operation. You remember that this issue is the fifth from the beginning—the next one will complete the first year. I have done my best to make *PHYSIOLOGIC THERAPEUTICS* as interesting, practical and alive as possible. So far I have paid out many dollars to the printers and to Uncle Sam; as a matter of fact, it would seem that all that I have done is to pay bills and keep the printer's presses running—I have thus far lost money on this venture. And this Special Number will sink me still deeper unless——?

This is just what I want to ask you about. Will you help me out? No! I don't want to borrow money and I have no stock to sell. I simply want to know whether *you* have been pleased enough with this issue, or with those of the previous issues which you may have seen, to go to a colleague and get him to subscribe. Not *ask* him to subscribe; but get the money and send in the subscription. Perhaps you haven't the time or the nerve and prefer to send in a subscription for a friend yourself. I don't mind how the subscriptions come, just as long as they come! And if *you* send me at least one subscription, all the obligations that have been incurred in producing this issue will be cleaned away.

I don't want to appear mendacious—I don't have to beg, but if you were in my place you would be very glad to see a hearty response to the request that I have made in this paragraph. Thank you cordially in advance for your trouble and the interest that prompted it.

* * * *

A word or two about the advertisements. I have tried to exercise great care in the advertising department of *PHYSIOLOGIC THERAPEUTICS*. I have been called names for not taking all kinds of legitimate ads. Perhaps I am wrong in believing that it is not consistent to advertise things which are not in harmony with the tenets of the therapeutic faith as taught by this journal. They tell me that I believe in drugs and use them. It is true, but in this particular journal we are attempting to confine ourselves to the non-medicinal methods, and, for the time being at least, we will not insert advertisements of drugs for internal use. I know there is a line to be drawn and will be criticized by some for drawing it where I have. At all events I want you to make yourselves at home with my advertisers. They are good people—else they would not be advertising here. They have good goods—else they would not be able to advertise them to you. Every time you patronize an advertiser in *PHYSIOLOGIC THERAPEUTICS*—and let him know where you saw his announcement—you are making it possible for me to run this journal for the second year.

* * * *

Please remember that this is a **DOUBLE NUMBER**. Next time you won't get such a big one. Don't let this be a disappointment to you.

Henry R. Harrower.

TRADE BOOSTERS BY THE EDITOR.

At last we have the system! For months I have been trying to get a chance to tell my readers about *the* system for physicians. Now, its here and you'll find it on p. ii.

Let me tell you frankly that this is something altogether out of the ordinary, or, as I like to say of **PHYSIOLOGIC THERAPEUTICS**, "in a class by itself."

Naturally, I can hardly refrain from saying a good word for this system, because I have investigated it thoroughly and know what I'm talking about. I would advise you to learn what it will do for *your* business.

* * * *

"The secret of success" is something that we are all trying hard to solve. The advertisement with this headline (page xiv), looks very reasonable. Why should we not be able to confer immunity to tuberculosis just as science has made it possible with several other infectious diseases. If you have any tuberculous patients, be sure to read this ad.

* * * *

"There Is No Time Like the Present" to Send in Your Subscription!

* * * *

The special \$236 offer made by the Scheidel Western X-ray Coil Co., on page xiii won't last very long. It is too good not to be snapped up very quickly. If you want a bargain that will please you a year after you have used it, write them, and write *at once*.

* * * *

Supposing you ask Lowenburg about that **FREE** offer made on page xxiii. It may be the entering wedge to very pleasant business relations. Perhaps his outfit is just what you have been looking for, and certainly it is most reasonably priced.

* * * *

Rather a peculiar ad on the back cover page! It may seem to some rather strongly put, but it is true, nevertheless. I wrote it myself and so take all the blame. My friend, Doctor Webster, the leading spirit in The Chicago Laboratory, is able to help you out of many a diagnostic pickle—if you'll let him. The special Wassermann offer is something that *you* need, especially if you are planning to use the Ehrlich-Hata "606." Write, and don't forget to mention P. T.

* * * *

Can You Afford to Get Along Without **PHYSIOLOGIC THERAPEUTICS? Surely Not!**

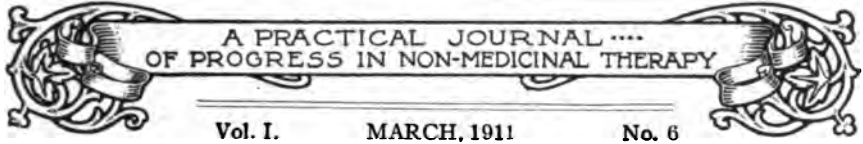
* * * *

Really, the suggestion made by Doctor Heintz on pages xviii and xix is worth accepting. Especially as it only costs you a stamp. The merits of this food-drug, for that is what this "health biscuit" advertised here amounts to, cannot be gainsaid. They are worthy of a trial and you will be soon convinced of their merits.

* * * *

Incidentally the combination book offers that I have succeeded in gathering together for your benefit on page I are all of them exceptionally good ones. No way to save money could be easier found as, of course, there is no question about the value of the books. Send in a nice order and don't forget to include a bound volume of P. T. The supply is limited, you know.

THE AMERICAN JOURNAL OF
Physiologic Therapeutics



EDITORIAL

PROGRESS IN THE THERAPY OF HYPERTENSION.

No disease or symptom-complex has come more prominently to the fore in the past ten years than that known as "high blood pressure" or hypertension. It would appear that more effort has been spent in investigating this condition in the past decade than in the whole of the rest of the history of medicine. This, we are confident, is due to the comparatively recent perfection of instruments whereby the arterial pressure and its variations can be easily and accurately determined.

Thanks, then, are due to such men as Stanton, Riva Rocci, Faught, Rogers, and others who have opened up this immense field and made it intelligible and interesting to the average physician. The blood-pressure machine or sphygmomanometer has come to be an integral part of the equipment of every progressive physician. (Of course every reader of *PHYSIOLOGIC THERAPEUTICS* has one!)

In regard to the treatment of hypertension, there has been a great variance of ideas. *Materia medica* contains a number of remedies which unquestionably have an influence upon the tension of the blood-stream; but, as far as we are aware, not one of these remedies produces other than temporary, evanescent effects. These drugs are simply make-shifts; but as such have a valuable place in our armamentarium, and we are not for one moment going to belittle ourselves by decrying their use.

On the other hand, however, it is a pleasure to know that physiologic therapeutics offers us such effective service in the treatment of hypertension, and we are glad indeed to be able to present to our readers some excellent ideas bearing on practically every phase of the non-medicinal treatment of this condition. We feel sure that the articles printed in this issue will convince every unbiased reader that in physiologic therapeutics lies the successful solution of the effective and permanent treatment of this affection.

THE LIGHT BATH IN HIGH BLOOD PRESSURE.

It would seem that many physicians, and in particular those in general practice, overlook one of the most effective means of combating hypertension. It is granted that physiologic therapeutics offers many means of influencing this all too common condition, but so far as we are aware light, and in particular the electric light bath is not used as much as it deserves, though this bath is one of the most sensible and rational procedures that we have at our command.

The therapeutic value of the light bath is not difficult to explain. Its physiologic action in hypertension is dependent upon two important factors, first, it stimulates cell activity both so far as the eliminating functions are concerned and it also influences the cell in a distinct tonic manner. Besides this the noticeable influence on the circulation is of great value. This is due to the fact that the effects of light on the skin materially increase its blood supply, thereby removing internal venous stasis and, in cases where the excessive blood pressure is due either to kidney changes or changes in the arteries in other parts of the body, the relief given by this derivative effect is often remarkable.

The value of the electric light bath has been somewhat passed over and too many physicians still feel that it is more to their advantage to invest their money in other things. They do not realize that practically every patient suffering from chronic disease would be the better of treatment with the electric light bath. The disadvantage which seems to deter many from investing in this appliance is the idea that the use of this measure entails certain after-treatment and they are loath to add to their equipment to such a degree. As a matter of fact, we have seen several physicians who used the electric light bath in their own offices without outside assistance and with signal advantage in their practice.

There is no reason under the sun why every progressive office practitioner should not add to his equipment by installing an electric light bath and, perhaps, an inexpensive spray. Not only will he add to his prestige but he will be able to get better results, and these results will by no means be least in the treatment of those cases which are suffering from hypertension.

A DEPARTMENT OF PSYCHOTHERAPY.

Psychotherapy is considered so simple by some writers that it is all summed up in the words "affirmative suggestion;" and the crudeness with which this is carried out is hardly credible to men of common sense, were one not to hear the glib utterances of its exponents about their methods.

Such methods are perfectly empirical, are prefaced by no analysis

nor more precise diagnosis than at most "a psychoneurosis," and consist mainly of an impressive and confident manner and the firm assurance either that there is nothing the matter or that this "suggestion" has the power of removing all incommoding symptoms.

This procedure is, we believe, inferior even to that of the Christian Scientist, who does at least change his patient's mental attitude towards something, even though it be by a delusional interpretation of the universe.

It is to substitute for this crass notion of psychotherapy something more rational, and to illustrate by examples the potentialities of the applications of science to psychic disorders that this department has been inaugurated. In it will be found, from time to time, the more practical results of the best French, American, German and Austrian work in this field.

WILLIAMS.

VACCINES IN WOUND INFECTIONS.

In the January number of *The Medical Herald* Dr. Edward H. Ochsner, of Chicago, in discussing the treatment of wounds, expresses himself regarding the use of bacterial vaccines in a way which seems, to us at least, to be in decided contrast to the doctor's well-known general surgical knowledge. Can it be possible that Doctor Ochsner's extended opportunities for clinical work have led him to make such statements as the following? "Vaccine therapy has its field of usefulness in the septic infections, but in my opinion only in the later stages." We cannot believe that this is a correct statement of the views of such an eminent surgeon; for time and again we have been told by those who know, that the time to begin the use of bacterial vaccines is *early*, when the chances for stimulating the opsonic-response in the blood is greatest and before the toxic products which inevitably are present in the later stages of septic infections have a chance to lower the resistance and diminish the chances of stimulating phagocytosis against the particular germ or germs that is causing the trouble. The time element is the most important factor. The earlier one begins the use of bacterial vaccines in an infection, the greater the chances of ultimate success. This surely cannot be gainsaid.

The above quotation continues: ". . . And then only autogenous vaccines. There are so many species and strains of streptococci and staphylococci that stock vaccines may do more harm than good, and it always takes several days to prepare an autogenous vaccine." We believe in being perfectly straightforward and honest. We do not claim superior knowledge or an excess of clinical opportunities; but if one is to judge alone from the results which are being obtained on all sides and the reports that are being found in current medical literature, we believe

that Doctor Ochsner will have to modify his statements. The quotation given above fully explains why the stock vaccine is preferable to the autogenous vaccine (in the treatment of septic infections in the later stages). "It always takes several days to prepare an autogenous vaccine;" and in the meantime the patient has either died or passed the time when the chances of success with this means of treatment were the greatest. The stock vaccines have the particular advantage of being easy of access and ready for use at once. Clinical experience has shown that stock vaccines play an important part—not an exclusive part, however—in the treatment of septic infections. Their value is measured by repeated results and, to put matters very plainly, the use of bacterial vaccines in wound infections has been proved to be a sensible, scientific and effective therapeutic procedure. Time and again it has been demonstrated that reasonably large doses of stock vaccines have increased the patient's resistance to the invasion by the particular germ or combination of germs that may be present. Some investigators have gone still further. Dr. Willard H. Hutchings, of Detroit, is now using stock vaccines as *prophylactors*—before operations. In every case in which surgical treatment is anticipated, suitable vaccines are injected, thus diminishing the chances of wound infection following the operation. Statistics show the reasonableness of Doctor Hutchings' ideas.

Apropos of this we would call the attention of our readers to the fact that bacterial vaccines are being successfully used in the treatment of the common alimentary infections, and the adjuvant use of these remarkable products in the toxemias due to intestinal putrefaction is proving to be a rational procedure.

Vaccine therapy is here to stay. Its success is unquestioned. Thousands of cases have already proved its value.

LACTIC BACTERIA IN HYPERTENSION.

The use of live cultures of certain lactic acid producing bacteria as a prophylactic against high blood-pressure was first suggested and emphasized by Professor Metchnikoff as a result of his investigations in the Pasteur Institute of Paris. It was found that the products of intestinal putrefaction had a noticeable influence on the arterial tension and also that the administration of certain lactic ferments materially reduced this untoward condition in the bowels. It was easy to deduce from this that the use of these ferments in sufficient quantities would naturally tend to prevent the toxemia and with it the associated high tension. This is true.

It has been found that certain nations are blessed with more hale and hearty old men and women and it so happens that their national

habit is to use large quantities of these "friendly germs" in the form of soured milk or "jahourt," as it is called. It is surprising how supple the arteries of some of these centenarians are.

Unfortunately, a flavor of skepticism has been cultivated through the ultra-commercial statements of some manufacturers who have even gone so far as to say that the use of liberal amounts of their particular brand of germs will influence hypertension, arteriosclerosis and even Bright's disease.

This we believe to be somewhat overdrawn, and the undoubted good in lactic bacterial therapy has been underrated by those who saw only the manufacturer's highly painted word-pictures.

We believe that this form of therapy is a valuable adjunct in the treatment of many gastro-intestinal affections and that it does actually influence alimentary toxemias for good and thereby tend to *prevent* the hypertension which would otherwise ultimately result; but that it is "a *cure* for high blood pressure"—well, hardly!

COMPARISONS OF THE EFFERVESCING BATHS.

In the renaissance of physiologic therapeutics a conspicuous part is played by the gaseous baths prepared by means of reacting chemicals which evolve, on the one hand, carbon dioxid, and on the other, oxygen. The theory that these procedures have merely a psychic or suggestive effect has been exploded since the advent of the sphygmomanometer has made possible exact determinations of their action on the circulatory apparatus.

It has not been possible to exactly reproduce, artificially, the natural carbonated bath. In the German spas the largest portion of the CO_2 is chemically combined with the water, while in the carbonated baths prepared by means of bicarbonate of soda and acids there is a great excess of uncombined CO_2 which is readily given off and inhaled by the bather with occasionally untoward results.

The oxygen bath is prepared by means of perborate of soda, a white powder which contains one loosely combined atom of oxygen, so that it forms with water a solution of H_2O_2 . A rapid decomposition of the H_2O_2 , with a vigorous effervescence, is attained by adding a manganese salt as "catalyzer" to the bath water. The materials are supplied in cans and afford a convenient means of employing balneologic treatment at home.

The effects of the two baths differ. In the CO_2 bath the skin becomes reddened because of the dilatation of the surface vessels, while in the oxygen bath the skin of the bather is blanched owing to the contraction of the cutaneous vessels. Winternitz¹, reporting comparative investigations of the various baths, states that at 95° F. the

oxygen bath reduces both pulse rate and blood pressure in a marked degree, augmenting the rhythmic contractions of the capillaries and dilating the vessels in the muscles.

Wolff² found that a pathologically altered blood pressure is raised by CO₂ baths of indifferent temperature to an even greater extent than it is lowered by oxygen baths of the same temperature.

Scholz³ agrees in all essentials with the investigations in Mueller's clinic⁴ and Laqueur's service⁵, as to the effects of gaseous baths on the circulation when all sources of error are excluded. With healthy subjects the reduction of blood pressure which occurs in the oxygen bath disappears almost at once, and the pulse behaves correspondingly. In organic heart affections, with no great loss of compensation, the blood pressure falls regularly and often remains lowered for two hours after an oxygen bath, and the rapid, feeble and irregular pulse improves.

Arteriosclerosis with hypertension is greatly benefited, especially in beginning stages. Here the oxygen bath exerts a mild gymnastic effect on the vessel walls which opposes the progress of the disease, and also relieves the heart. We find on investigating the reports that these effects are often lasting. Affections of the cardiac muscle—chronic myocarditis, fatty heart—constitute the therapeutic field of the carbonated bath. In nephritis the oxygen bath lowers blood pressure and makes the tense pulse softer and slower. Cardiac neuroses and tachycardia yield to oxygen baths. In neurasthenic insomnia their sedative and sleep promoting effects make them particularly useful. The CO₂ baths exercise the heart, while the O baths rest it; the former raise blood pressure and strengthen the central activity, while the latter reduce blood pressure and stimulate the peripheral vessels. By a preliminary course of oxygen baths a patient may be prepared for the tax which the CO₂ bath makes upon the heart.

Munk⁶ found that oxygen baths raise the muscular tone and reduce the subjective sensation of warmth, so that the patients can be given baths at much higher temperatures than they could bear in plain water. He therefore recommends the oxygen bath in relaxed paralysis, certain forms of tabes, in nervous affections with increased excitability and Graves' disease. The CO₂ bath is a stimulating procedure, while the oxygen bath is a sedative one.

Kellogg⁷ thinks that the oxygen bath accomplishes everything that the carbon dioxid can, but that the former encourages skin respiration, while the latter suspends it; moreover the inhalation of carbonic acid fumes is detrimental while that of oxygen is beneficial.

Michaelis⁸ also points out that progressive therapists are more and more in favor of the oxygen bath because it induces peripheral

stimulation, gives the benefit of oxygen inhalation and has favorable sedative effects.

Doubtless we possess in the gaseous baths a means of avoiding recourse to drugs, and in the form in which they are marketed for home use they present a valuable addition to the physician's armamentarium, obviating the need of prescribing expensive trips to the foreign watering places.

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1. *Blaetter f. klin. Hydrother.* 1907, No. 1.
 2. *Zeitschrift f. physikalische und diaetetische Therapie*, 1910, Vol. 14.
 3. *Deutsche Med. Wochenschr.*, 1910, No. 48. 3.
 4. *Muench. med. Wochenschr.*, 1908, No. 30.
 5. *Deut. med. Wochenschr.*, 1907, No. 1.
 6. (Ziehen's Clinic) *Mediz. Klinik*, 1910, No. 24.
 7. *Good Health*, August, 1910.
 8. *Therapie d. Gegenwart*, 1909, No. 12.
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OUR INDEX AND THE BOUND VOLUME.

Attention is called to the index to Volume I of *PHYSIOLOGIC THERAPEUTICS*, which will be found in this issue. An attempt has been made to make this index of much value to those desiring to use this journal as a work of reference. We hope that we may have succeeded.

In looking over the contents of this volume, it is both surprising and encouraging to note what a wealth of material has been stowed away in these 460 odd pages. We attempted to make up some statistics, but it was too much for us. We know this, however, that this volume contains *over one thousand* original articles, reprinted articles, editorials, abstracts, translations, and facts regarding every phase of treatment without drugs.

Without a doubt this volume is worthy of preservation, and it is to be hoped that many readers will either bind their copies, or secure a bound volume, of which at the present writing there are 264 available.

Economy is one of the most essential elements of success, yet most wretchedly disregarded. The old adage, "Willful waste makes woeful want," never was more fully exemplified than in these days when much of the want that now prevails would not exist had care been taken in time of prosperity to lay up something for a "rainy day."—Marshall Field.

ORIGINAL ARTICLES

HYDROTHERAPY IN HYPERTENSION.

BY SIMON BARUCH, A. M., M. D., NEW YORK CITY.

Professor of Hydrotherapy, Medical Department Columbia University, Etc.

In an address delivered in Richmond, Va., last summer* on "Lessons of Half a Century in Medicine," I referred to the persistence and recurrence of errors that have been shelved, saying, "There appears to exist a form of *circular therapeutic obsession*, if I may be permitted to coin a term." Among these errors was mentioned polypharmacy, which had been almost swept from influence by Oliver Wendell Holmes' sarcasms, by Jacob Bigelow's "Nature in Disease," which were followed much later by the teachings of the great clinicians of Europe and of men like Austin Flint in our country. I pointed out the deplorable fact that our best medical journals are filled with announcements advertising all sorts of new symptom remedies claiming to subdue pain, reduce temperature, regulate cardiac action, produce sleep, enrich the blood, stimulate the eliminating organs, enhance secretions, disinfect the excretory channels, in short to emancipate the doctor from all care and anxiety in the conduct of his cases. The fact that the manufacturers of these preparations, the names which even were unknown to us, spend large sums in advertising proves that they are abundantly used. There never was a time in the history of medicine when proprietary remedies were so numerous. Indeed, it taxes the most alert and attentive practitioner to keep abreast of them. So bold and disrespectful have the drug manufacturers become that they offer us prescriptions of combined medicines as panaceas for all ills, the greatest of which is shrewdly recognized by them to be the prescriber's indolence to think out his own prescriptions.

Hypertension an Indicator of other Disorders.

Symptom medication and polypharmacy go hand in hand. Elevated temperature, rapid pulse, cough, etc., were once treated as essentials. Happily this pursuit of symptoms ceased almost entirely after a long and deplorable existence. This merited desuetude appears to be short-lived, however. A new symptom now claims attention as insistently as high temperature formerly did. What intelligent physician now treats elevated temperature by routine measures? Like the latter, hypertension must be regarded as a danger signal, but not as a hostile entity. The chief difference with regard to the therapeutic significance of these manifestations lies in the fact that while high temperature is always

*Old Dominion Journal of Medicine and Surgery, July, 1910.

noted in connection with a well ascertained diseased condition, hypertension may be present without a single recognized pathologic condition. And this is my reason for drawing a distinction which seems obvious. If the practitioner acts upon the idea which seems prevalent that he must treat the hypertension he may lose sight of the pathologic condition of which it may be a primary manifestation, and if he succeeds in removing it as he may do temporarily in initial conditions, the progress of the malady may pass beyond removal or relief. Heaven forbid a repetition of the history of antipyresis! This would indeed be a "circular therapeutic obsession," deplorable because it may repeat the painful contentions and sad mortality statistics of the eighties and early nineties. An unhappy echo of this period of temperature battles still remains in all our text books, which repeat the oft-repeated tale that sunstroke requires antithermic treatment, just as was demanded in typhoid fever twenty years ago and even later.

Since 1898 my book on Hydrotherapy furnished the largest statistical proof of the fallacy that the coldest bath is the most useful in sunstroke, by showing that affusions and sprays of water at 70° were followed by a mortality of 6 to 11%, while the ice bath showed a mortality of 33%. And yet most text books continue to advise the ice bath or ice pack. I would fain urge the avoidance of such therapeutic fallacies, based upon symptom treatment.

In the acute condition of hypertension alone is treatment directed to this symptom demanded. The patient's safety urges a rapid restitution of normal circulatory conditions if we would avoid a fatal issue. In puerperal eclampsia, for instance, it has long been a practice even before the significance of blood pressure had been studied, to make use of blood letting, hot air baths or veratrum viride in large doses, and other depressants, the so-called "arterial sedatives." How many women were hastened to the grave by injudicious bleeding which resulted in cerebral edema, remains a mystery. Nevertheless many women were saved; these probably suffered from high tension, unrecognized at that time as the most salient feature.

Hot Baths and Packs Inefficient.

The hot air bath, as administered at the bedside, is refined torture. The imperfection of the usual technique demands its abolition. The now popular hot blanket pack has in my hands proven inefficient. In a clinical lecture to the class of the Postgraduate Medical School at the Hood Wright Hospital several years ago, I demonstrated that such a pack applied to a case of chronic nephritis produced no effect upon the tension, and that the blanket was found cool when removed an hour after application. A wet pack applied to an unconscious woman

whose puerperal convulsions had been checked by forced delivery, relieved hypertension; the renal insufficiency was removed and consciousness was restored. When the sheet wrung out of water at 70° F. was wrapped around her she exclaimed: "Oh, this is cold!" The sheet, when removed an hour later, was found warm and the cutaneous vessels hyperemic. If the object of the procedure is to relieve tension, the object is not accomplished by the hot blanket, because while it does produce a temporary cutaneous hyperemia, and probably perspiration, this soon subsides by reason of the equalization of temperature between the hot blanket and the normal or almost normal skin temperature, so that at the end of the hour the blanket has lost all its heat and thus the cutaneous circulation returns to its previous condition, despite the rubber sheet envelope. In the accurately applied wet pack at 70° F. on the contrary, the impact of cold stimulates the cutaneous vessels primarily to contraction producing an evanescent slight increase of arterial tension; this is quickly followed by reaction, under which the cutaneous vessels become dilated. The sheet is warmed by the increased flow of arterial blood and the patient lies in a mild vapor bath of his own creation. Metabolism is increased and elimination of toxic material goes on apace, the renal circulation is improved by the primary action of the cold, and all the conditions which favor a *restitutio ad integrum* are established. In the acute uremia of nephritis with high tension, especially when accompanied by a rise of temperature, a condition often also encountered in puerperal eclampsias, the wet pack of not more than 70° F. fulfills indications to tide the patient over impending dissolution. It may be advantageously repeated in two hours, if the sheet feels warm. If, however, the sheet is found cool, the hot bath pack as described in my book*, the technic being followed with precise attention, will prove valuable in reducing tension which threatens life. This must not be repeated and the pulse and mouth temperature, which are apt to rise, should be cautiously noted. In the high tension of acute uremic conditions, which so often endanger the patient suffering from chronic nephritis, the procedures above mentioned are applicable; the wet pack at 70° being preferable, owing to its roborant rather than depressing action.

In chronic hypertension, the cause must be sought out and treated. Moreover, it is extremely important to bear in mind that high tension is not always dangerous of itself. Indeed, it is most frequently the result of an effort of the organism to restore lost equilibrium in the circulation of the eliminating excretory organs. In others words, it may

*The Principles and Practice of Hydrotherapy—William Wood & Co., third edition, page 467.

be as compensatory as high elevation of temperature is regarded by progressive physicians in some fevers.

The Value of the CO₂ Bath.

In the high tension of the "gouty diathesis" I find a full bath of 102° for an hour. The CO₂ bath, consisting of CO₂ formed by the reaction of formic acid or bicarbonate of soda, is a useful addition, if the heart be at all depreciated. The patient is dried and placed in a warm bed to rest an hour. This procedure may be advantageously repeated three times a week, evening being the most convenient and best time. Such a procedure has by actual analysis in Von Mering's clinic produced an increase of 91% in the CO₂ output, and of 78% in the oxygen intake. Such positive evidence of enhancement of tissue change no medicinal agent is capable of producing. In the depreciated types of gout this bath may be alternated with a tonic procedure, ablu-tion and the neurovascular training by reduction of water temperature, gradually passing to the drip sheet, when reaction is well established. It is the paramount credit of water as a remedial agent that by modification of temperature, duration and technic tonic, "alterative" or sedative action may be induced. The obstacle to its more general use lies in the seeming difficulty of adopting these elements of treatment to the individual case. There are now five books in the English language (when my first book was written it was the only one) on scientific hydrotherapy. No one will succeed in the wise prescription of water if he does not have a reliable guide and has not mastered the simple physiological basis of this agent.

In the hypertension of neurasthenics to which insomnia may not rarely be traced, the wet pack at 70° F. at bedtime, leaving the patient in two hours or longer if he is drowsy or asleep, has demonstraed its value repeatedly. In these cases the versatility of hydrotherapy is pronounced. For we may apply tonic measures during the day, from ablutions and drip sheets to douches with pressure, temperature and duration adapted to the indications of each individual case. In the *hypertension of high livers*, proper exercise alternated with rest, correct diet and hot air baths followed by douches of 85 to 95° F. with pressure below twenty pounds, prolonged gradually to two or more minutes, are useful, as are daily baths of 95 to 100° F. for half an hour, followed by good friction. It is a serious error to force obese people, or even plethoric high livers who present hypertension, to violent exercise. It is unhappily a routine prescription; "walk all you can, ride a bicycle or take gymnastic work." This is a serious error. Resisting movements followed later by moderate exercise are indicated. In the hypertension of arterio-sclerosis great care should be exercised. CO₂ baths, of which the Zen

bath is the best form, at a temperature not higher than 103° F., nor lower than 95° F., tend to restore the equilibrium without undue strain. Cold procedures are injurious in most cases, except partial cold rubs of the upper part of the body in pale or depreciated patients. A wet turban is required during the bath.

To recapitulate the application of water in hypertension is valuable because of its capacity for producing varying therapeutic effects under varying technic, temperature duration, pressure and subsequent conduct.

135 West 73rd Street.

NERVOUS SYMPTOMS OF ARTERIOSCLEROSIS AND THEIR REMOVAL BY DIET.

BY TOM A. WILLIAMS, M. B., C. M. EDIN., WASHINGTON, D. C.

Member Corresp. Societe de Neurologie, Paris; Member Corresp. Soc. de Psychol., Paris; Neurologist, Epiphany Free Dispensary, Etc.

Not in all persons is the blood pressure much raised by the toxins which sclerose the blood vessels. In these cases the earliest signs are often those of perturbed "nerves." Thus, in the case of a man of 64, referred to me by Dr. Philip Roy, having disregarded a matutinal insomnia, a sudden epileptic attack after working at a high elevation was the first signal. Four of these occurred within two months. The blood pressure never exceeded 180 mm. The only indices of cerebral lesion were slightly unequal reflexes and a lessened sense of altitudes in the left hand. Incipient sclerosis of vessels of right sensori-motor area having been diagnosed, he remains well twenty months later as a result of a diet of low protein content, to subdue the toxicosis which was believed to be the source of the disorder.

A physician of 68 was referred by Dr. A. E. Balloch, after a year's grief and worry. He slept badly, had paresthesiæ in his hands, feet, and hearing organ. He took narcotics in increasing amounts. He lost weight and power of endurance. His optimism was replaced by dullness or distress by turns; and he wept much over his griefs. No objective changes of reactions of nervous system were revealed by examination. The tension was 160 mm. By sclerogenetic toxicosis was diagnosed from the matutinal nature of the insomnia, the paræsthesiæ without sensory changes and the loss of endurance. A diet low in proteins and purins lead to disappearance of unpleasant symptoms. He remains well two years later.

It is not only in the aged that the syndrome mentioned above occurs and can be removed by these means. A case of metabolic psychasthenia comes to mind. An engineer of 38, referred by Dr. Atkinson, was a powerful, energetic man, formerly accustomed to active work. He

began to be unable to concentrate upon the office work to which he had confined himself for over three months. Previous to this, he had been much less active; and latterly, he had been very much worried by an official inquiry into a contract for which he had been mainly responsible. For no cause known to him, he feels a dread in the mornings, and an indecision in business matters is now realized to have been present several months. He had been improved by three weeks in the woods, during which he was very somnolent, but relapsed at once upon his return, and could hardly stand his morning suffering. There was no insomnia.

An examination showed the reflexes were rather active, but there was no other objective change in the lower neurones; there was no amnesia; the sexual hygiene was normal. He was much depressed, and longed to go away from it all for a year, which he could well afford to do.

He was sent for three weeks into the mountains. This time he fully recovered, on account of the light diet which he took. Breakfast and supper were fruit and milk, and his midday dinner was vegetables and 6 oz. of meat; after a few days cereals were added morning and night. He is now perfectly well and at the head of a large business demanding much office work.

As prevention excels cure, such results are evidently better than those obtained by the removal of and effects by baths, electricity or chemical eliminants (duretics, sudorifics, purgatives), or antagonists (iodides, nitrites), or still worse, narcotics, hypnotics or calmatives, which only mask the disease while it progresses.

In a future note the diet will be described in detail.

1758 K Street, N. W.

THE ELECTRIC MODALITIES AND THEIR INFLUENCE ON HIGH BLOOD PRESSURE.

President of the American Electro Therapeutic Association, etc., etc.

BY FREDERIC DEKRAFT, M. D., NEW YORK CITY.

Man's needs are few, but his wants are apt to be many, if his station in a modern civilized community is of the highest order. His ambition to reach a higher plane only too frequently leads to undue physical and mental strain, irregular habits of living, etc. Success once attained, is too often followed by indulgence in his appetites. Gastro-intestinal disturbances result in the formation of fermentive processes, causing noxious substances to enter the circulation.

The excessive use of alcohol, tobacco, coffee, tea and spices, the products of fatigue poisons resulting from the hurry, worry and excitement, all help in one way or another to send irritating products into the

blood, which are the cause of the angiospasm. The syphilitic and gonorrhoeal virus, too, as well as a distant irritation such as urethral stricture, chronic prostatic congestion, may keep up hypertension. Without the proper attention to the removal of these causes, electrical or any other therapeutic measures are doomed to failure.

The Auto-Condensation Treatment.

The method known as auto-condensation by means of the D'Arsonval current deserves to be mentioned first. To practice this, we may employ a very large static machine, capable of being run at a fairly high speed, or a Rhumkorff coil with mechanical break, or one of the newer models of step-up transformers for the production of the high potential current needed for charging the Leyden jars. These should be of very heavy Bohemian glass and of not too large a capacity. A spiral of thick copper and twenty-five turns is connected to the outer coatings of the Leyden jars. One end of this spiral is connected to a metal sheet. This metal-sheet should be long enough to cover the full length of the couch or folding arm chair and should be covered with insulating material of sufficient thickness to prevent even a suspicion of prickling sensation. On the couch or chair so prepared we place our patient and connect him metalically to the other end of the solenoid by a pair of handles, and rheophon, or a large metal plate, to the abdomen. The length of spark at the exploders should be adjusted to suit the resistance the current is likely to encounter in the arms or body of the patient and in the dielectric on the couch. Its length governs to a very large degree the potential of the current employed. The size of the Leyden jars govern to a large extent the length of the oscillation. The *tout ensemble* regulates the frequency.

The hot wire meter should always be placed in circuit when a person is receiving the D'Arsonval current by means of auto-condensation. With the electrodes held in the hands, the current passes along the blood vessels and the muscles. Dilatation of the arteries over the wrist and hands, the skin of the neck and face is observed in a very few minutes. Probably the same vaso-dilating effect occurs in the *vasa vasorum*.

Increased Nutrition Accomplishes the Results.

A greater supply of blood coming to the arteries, better nutrition is taking place. Hence, repair of damage done. This vaso-dilation relieves the spasm in the muscular coat of the blood vessels. This, too, has a salutary effect, for we know that a muscle in a state of tension through overwork is in that condition where it has lost its resiliency, its pliability, its usefulness for quick action, and is in a state where if overwork continues not only further growth in bulk is impossible, but diminution in size follows. It is undoubtedly true that degenerative

changes in the cardio-vascular system follow a variable period of hypertension.

This angiospasm is likely to show itself first in the part of the body which the patient has overtaxed most, as in the brain or in the splanchnic area, giving rise to symptomatic disturbances referable to that part. Such a condition of the vessels of the brain favors thrombosis and its consequent softening, or leads to hemorrhage on the cardiac side of the spasm. Many cases of so-called "nervous headache" are due to this angiospasm.

In the treatment of these cases of localizable spasm, we should place the electrode directly to this part, or better yet, use the bipolar method directly to the part. The term "diathermy," as employed for this method, is unfortunate because it is really a secondary effect of rapidly oscillating currents passing through the tissue.

The great rapidity of succeeding groups of oscillations passing in straight lines directly through the tissues, effect a heating through friction, through a microscopical, mechanical, molecular massage. This heating is accomplished with electrolysis, or molecular change.

This same angiospasm, when occurring in the kidneys, leads to cirrhotic and other changes if unrelieved; myocardial degeneration with all its pangs is sure to follow if the spasm is long confined to the coronary arteries. So surely can arterial spasm be relieved by the bi-polar and auto-condensation methods that it may be said that wherever the sphygmometer reading remains persistently unchanged following a proper application of the methods described, we are confronted with a case where serious changes in the cardio-vascular system have already begun.

All forms of high frequency currents have some effect in relieving hypertension, so has also the wave-current, the electric light bath and the high power incandescent light, but the methods first described will be found to be most effective and easiest of general application. The effects produced by a systematic employment, according to the indications in the individual cases, are as permanent as any of our efforts could be wished to be when spent in other pursuits.

148 West 70th Street.

PHOTO-THERAPY IN HYPERTENSION.

BY F. ROBERT BOYD, A. M., M. D., ST. LOUIS, MO.

The subject of hypertension, embracing as it does a history of disturbance of organic function and all the complex conditions that follow on into a well developed arteriosclerosis, is really of greater magnitude than can be covered in one small paper. Without doing more than merely touching now and then upon a phase relative to its cause and

progression, and the actual degenerative changes that must and do characterize it as an incurable disease, rapidly dangerous to life, hypertension thus is an important subject, both as indicative of antecedent conditions that have been wrought out through bad habits, bad hygiene, or vitiated functions. This means auto-intoxications, which are known to have an important influence in bringing about abnormal blood pressure. As to determining the primary cause of a beginning hypertension, the question is not to be discussed here. Whether the indulgences so frequent in early life may not often be the cause of the initial onset of a beginning tension is, in my judgment, worthy of consideration, and one, it would seem, which might interest anyone writing upon the etiology of arterio-sclerosis.

Osler, in speaking of the causes that keep up a high blood tension, says that the recent work of experimental arterio-sclerosis shows the great importance of this factor in causing an arterial degeneration.

The varying conditions of age are such that the degree of pressure in the arteries is ever seeking to adapt itself to the circulation of the blood within them. The limitations are thus apparent when this pressure increases beyond their power to longer resist it, and the vessel wall, losing its nutrition, yields sooner or later to the process which robs it of its elasticity. Knowing, as we do, that the reduction of this pressure, whether due to one cause or another, is the question of prime importance if we are to succeed in modifying a tension that began early in life, and which bids fair to eventuate in a decrease of mental and bodily vigor, even though there may be no other symptoms of actual disease present, we should be wide awake to any effectual means of accomplishing this end. If a blood tension has become very high, other symptoms of grave importance may supervene at any time and a break in good health become imminent at any moment, even though a man may be yet under forty years of age. Osler believes that "It is rare to find the arteries entirely free from disease. Even in children small flecks of atheroma, or fatty degeneration of the intima, are by no means uncommon. In the bodies of middle-aged persons some arterial degeneration is always present, and as a rule, the older the individual, the more pronounced they are." Taking the above to be true, it can hardly be thought possible that cases of hypertension, in either old or young, can be free from some degree of degenerative tissue change in the arteries.

With the developments of modern science relative to the high efficiency of today's treatment of hypertension, men may read the quotation from so eminent an authority as Osler and condone themselves on the effect of modern therapeutics; but when we reflect that the evidences of these arterial changes are like the changes that take place

in the posterior columns of the cord in tabes, they mean death, and even though in some instances treatment may in a measure arrest the process, yet no power other than Omnipotence can restore to a primeval integrity. This may not have the ring of cheer in it for those who know that over-eating, over-drinking, over-working and over-indulgences in all that has kept them under a long sustained hypertension, begins to suggest to them in the symptoms of daily life that some new changes really have taken place.

Where Does Hypertension Begin?

With the distension of the blood vessels, incident to over-feeding and over-drinking, toxic substances are readily formed which primarily and secondarily influence metabolism, always expending its energy at some point of the delicate intima of the arteries, and this change hastening on to structural degeneration soon leaves its impression in lowered vitality. Of course there are changes which we term natural, and which must sooner or later show up in all things that wear out. Such natural changes are always greatly intensified when function begins to fall short of its original best; thus toxic products enter into consideration, and the law of compensation must manifest some impulse to the rescue. Where does the process begin? Is there a true hypertrophy of muscle fibre? What is the relation of hypertension to sclerotic changes? Which comes first? Is the primary mischief caused by a toxin in the finer tissues of the capillary and arteries, or do these irritating substances cause spasm of the smaller vessels and so raise the tension? What is the relation of involuntary changes met with in old age to those met in younger persons, are all questions that have never been fully and definitely settled by such men as Gull, Sutton, Dickinson and others, and are particularly interesting in that more recently Osler says: "We lack definite knowledge of the finer changes in the capillaries, which are probably always involved, and we can not say that any of these problems are finally settled, and the whole question is in the melting pot." All this, and far more, has been evolved out of the remarkable study of experimental arterio-sclerosis. The differences in men as to the manifestations of increased blood tension, as well as to the beginning of, or rapidity or extent of, its damages, are so wide, and much of the phenomena so obscure, that we are often left much in the dark relative to a clear analytical understanding of the whole subject. In this, as in many other diseases, empiricism seems to have had much to do in urging the profession on in some measure to success.

In following out any system of treatment for hypertension, one thing of no small importance, indeed one that attaches such responsibility as to demand something of routine, is a most emphatic and imperative regulation, not alone of diet, but also of the habits of life relative to

eating, drinking, sleeping, working, playing and even thinking. I also believe that some instruction in the intelligent use of the mind and brain, as set forth in the consensus of the opinions of A. T. Scofield, William James, Oliver Huckle, Paul Dubois and others who have come to be acknowledged authority on the governing forces that have much influence in the realm of the automatic or unconscious cerebration. I do not desire to spring any dissertation upon psychology here. That which is to characterize and interest the reader most in this number of *Physiologic Therapeutics* is "Phototherapy in Hypertension." I do desire, however, to place emphasis upon every auxiliary to the therapeutics of light that will do the most to intensify its highest utility. Dr. T. D. Crothers has well emphasized this thought on the value of suggestion in his article on phototherapy, given in the transactions of the nineteenth session of the American Electro-Therapeutic Association in New York, 1909. Some patients, no matter what the trouble, are peculiarly susceptible to the skilful use of suggestion. One other thing of marked utility and one which should never be neglected in cases of hypertension, is the use of the sphygmomanometer. Care and time should mark the exact blood pressure in mms. Hg., and this should be done, at least once a month, or oftener if need be. It is useful both in determining the status of your case in beginning, and in watching the progress of the treatment. In these cases, especially where photo-therapy or auto-condensation are resorted to, the frequent use of the thermometer should be had.

The Importance of Light Therapy.

William Benham Snow, writing in the January, 1911, number of *The Journal of Advanced Therapeutics*, says, "The reduction of arterial hypertension may be effected in various ways," and proceeds to mention some of them. Two of these methods he seems to place emphasis upon, which I believe meet with approval among men who have studied them. They are, in the generally accepted order of their value, d'Arsenvalization by auto-condensation, and the various modalities of photo-therapy. To those who have studied the light question both from the technical and scientific, as well as from the clinical standpoint, there certainly is plenty of ground for enthusiasm. In my own experience I have frequently had resource in hypertension and arterio-sclerosis to the d'Arsenval high frequency in auto-condensation than in any other modality, and have always been highly pleased with it, but from the reports given by Kellogg, Snow, Freund, Cleaves, and others on the results obtained by the therapeutics of light, we are justified in expecting great things from its use in all conditions involving the life and integrity of the arteries. We can not take time nor space here to even touch upon the physics of light energy. We can only, in a cursory way, mention the most practical manner of its use. The most

valuable qualities of light are classed under three heads: The incandescent—containing but a small quantity of the chemical or the luminous rays, and for that reason the use of it is not so highly esteemed by many. Second, the luminous rays—as represented by the arc light, and which contains a larger proportion of the chemical rays. Third, chemical or actinic rays of higher frequencies. The first of these is in the lower frequencies, and is found in the red and infra-red portion of the spectrum, and if used with only one unit, but a low potential can be obtained—but the value of this potential can be increased by a larger per cent, if the number of units is increased to 50 or 100—16 or 32 candle power lamps. In this way, by combining the thermic and chemical effect of many units, the incandescent bath cabinet, by its general application, proves highly efficient therapeutically, not only in hypertension, but in all conditions involved in a lowered nutrition. Its value in dilating the capillaries of the skin, in taking off the resistance of an over-worked heart, while all the functional activities of the body are quickened, thus stimulating both assimilation and elimination, conserving the energies of metabolism. Kellogg also highly commends “the application of the arc light to successive areas of the skin, going over the whole surface of the body, in the course of a week, the intensity of the application should be sufficient to produce a moderate degree of photo-erythema, this permanent dilatation of the vessels greatly relieves the work of the heart in cases of hypertension.”

The frequency with which cardiac hypertrophy is met in hypertension renders the light bath of great value in the quick and rapid reduction of the blood pressure, which may begin within a very short time after treatment has begun, and the application may be repeated every two or three days until danger is past, the spasm of the musculature of the vessels arrested and its walls relaxed, the decreased amount of toxins, by increased oxidation and elimination of waste material, the enriched quality of the blood, by increase of hemoglobin, with all it means in imparting and disseminating new potential qualities everywhere, make it a treatment of very great efficiency.

406-7-8-9 Century Building.

Work has made me what I am.
I never ate a bit of idle bread in
my life.—Daniel Webster.

* * *

It is two per cent genius and
ninety-eight per cent honest
effort that brings about success
in any line of work.—Thomas A.
Edison.

THE VALUE OF PHYSICAL MEASURES IN THE TREATMENT OF HYPERTENSION.

BY FRANCIS ASHLEY FAUGHT, M. D., PHILADELPHIA, PA.

Instructor in Medicine Medico-Chirurgical College, Etc.

During the past year it has been my good fortune to encounter several rather interesting cases presenting abnormal blood pressure, some of which gave readings of over 300 millimeters on several occasions. Before presenting the histories and characters of a few of these, it might be well to consider for a few moments the significance of blood pressure.

There is at the present time a tendency upon the part of medical writers, to consider high blood pressure as a disease entity rather than merely important symptoms. The true value of blood pressure is simply that of a prominent symptom, and to consider it more than that, often leads to grave error in the management of such conditions.

Too Much Treatment May Do Harm.

The fact is often lost sight of that an elevation in blood pressure may be and often is a conservative act on the part of nature to maintain a normal blood supply to certain diseased organs, particularly the kidneys. From this it develops that measures directed towards the lowering of blood pressure in such cases may be entirely misdirected, and that the results of such efforts pushed to their limit may result in disaster. For it is well known that great and sudden falls in blood pressure, as those occurring in shock and after severe hemorrhage, may be in themselves dangerous.

Therefore, we should not blindly set about the lowering of blood pressure to the normal standard of health in any case, until we have determined that this elevation of blood pressure is not more beneficial than harmful. And even when such measures are employed their two sudden and rapid action should be guarded against.

In the employment of therapeutic measures for the reduction of hypertension, those measures should be adopted which as nearly approach the physiological as possible. In studying the proper methods of controlling hypertension, we may roughly divide them into medicinal and physical. Among these two classes it has been found by many observers that the former hold a very subservient part in the treatment of hypertension. Careful work of an experimental nature with the nitrite group shows that their effect even in large doses is slight and very transient; and that the employment of these drugs over a long period of time is not practical.

On the other hand, we may control dangerously high blood pressure by physical measures with great benefit, which have the advantage of being available over long periods. The use of the various hot packs,

vapor baths, and moderate and carefully directed exercise all appear to have a decidedly beneficial effect upon high pressure, particularly where used in arterio-sclerosis and chronic contracted kidney.

Walking a Valuable Measure.

In some of my cases I have been able to control the conditions symptomatically by hygienic measures alone, coupled with regular and mild exercise such as walking. One case has been able to return to his vocation and enjoy comparatively good health with freedom from the usual head pains, gastric disturbances, nervousness, etc., which usually accompany the more advanced cases of arterio-sclerosis. Very few drugs were used, practically his only continuous treatment being a moderate diet and regular exercise.

Among the hydrotherapeutic measures which are at our hand, I have found the hot pack and the cabinet vapor baths most reliable. They usually may be depended upon for a safe reduction on blood pressure, often amounting to from 20 to 60 millimeters, without any untoward symptoms, the patients usually expressing themselves as feeling very well afterward.

The conditions which give rise to a permanent elevation in blood pressure calling for treatment may be divided roughly into those in which the predominating pathological condition is, first, arterio-sclerosis; second, chronic contracted kidney; third, chronic myocarditis and fourth, uremia. The following case histories are more or less typical of these several conditions, although it is evident from a pathological standpoint that it is impossible to absolutely separate one from the other, since the etiologic factor in any of these conditions, can hardly involve one organ or system without more or less complicating the others.

Case Histories.

Case I.—Chronic Myocarditis and Arterio-sclerosis.

Dec. 21-10. Mr. B. T. Age 52. Banker.

Family history negative.

Previous Personal History.—Inflammatory rheumatism in 1879. Syphilis infection 1881, followed by long course of treatment. No return. Slight return of rheumatism about ten years ago. For years has been subject to epistaxis. This is becoming more frequent.

Social History.—Has always used alcohol in moderation, and never before breakfast. Uses coffee to excess; smokes at least a dozen strong cigars a day. For the past twenty-five years, has taken large doses of bromo-caffeine on rising in the morning.

History of Present Condition.—Passed a successful examination for life insurance about five years ago. About six months ago developed occasional and transient attacks of dizziness and slight dyspnoea. Has frequent occipital headaches, occasionally with nausea and mild attacks of indigestion. Is constipated and these attacks are relieved by purging.

The face often becomes flushed. He is irritable and more nervous than formerly. Has insomnia which is getting worse.

Examination.—Full florid countenance. Fairly clear skin. Slight cyanosis. Tongue furred. Pulse slow, full and regular. Radial and temporal arteries moderately thickened. Heart dullness slightly enlarged; sounds good; aortic sound sharp and ringing. Chest and abdomen negative. Pulse 68. Blood pressure 210 mm. Hg. As soon as the elevation of pressure was found to be under control, drug treatment was stopped, and from the beginning of March until the present time, chief dependence was placed upon two hot baths of ten minutes duration each, per week, together with daily systematic exercise by walking, so that by the beginning of May, the patient averaged four or five miles a day. During this time, not only was the blood pressure under control, but all subjective signs were greatly improved, so that the patient was able to return to his vocation and to carry on his business without difficulty. When last seen on January 5, 1911, the patient's general condition was excellent. He had gone through a severe nervous strain incident to financial reverses, and in spite of which his recorded blood pressure is below the original level.

The examinations of the urine in this case throughout the year showed a slightly lower specific gravity; occasional traces of albumin and irregular appearance of hyaline casts, cylindroids and blood cells.

Case II.—Mrs. C. Sept. 8. Chronic Interstitial Nephritis.

Age 54. Experienced Nurse.

Family History.—Negative. Many died of extreme old age.

Previous Personal History.—Negative, except that she has always had to work very hard.

Social History.—Drinks tea and coffee in moderation; very seldom drinks water, except in very warm weather.

Examination.—About a year and a half ago while lifting a patient from a bath fell and was found unconscious. After a period of three weeks in bed, during which time she seems to remember very little, she apparently recovered. Since then has experienced frequent attacks of dizziness with dyspnea and palpitation on slight exertion. During the past year, her weight has dropped from 156 to 119 pounds. She seems very weak and cerebration is an effort. Her memory seems to be failing. She complains of pain in the back and frequent attacks of indigestion with nausea and constipation. Some edema of the lids and ankles in the morning.

Examination.—Moderately emaciated. Skin dry. Slight general sign of cyanosis. Facial expression, anxious. Superficial vessels quite thick and tortuous. Pulse full, tense and irregular in force and rhythm. Heart dullness slightly increased. Aortic second accentuated. Blood pressure, sitting, 305 mm. Hg. Twenty-four hours urine equals 96 ounces. Urinalysis shows the picture of chronic interstitial nephritis. The patient was not confined to bed until February 1-11, when she showed all the symptoms originally reported, including mental confusion, severe pain in the head and eyes, great weakness and edema. The blood pressure was again 310, which partly responded to the hot pack, assisted by a purge and nitroglycerine.

Case III.—Mrs. C.

11-26-'10. Age 54. Housewife. Three children.

Diagnosis.—Uremic paralysis.

Family History.—Negative, except that one sister died of paralysis.

Previous Personal History.—As far as could be learned this has no significance except that she has always had to work very hard. Gives a vague history of having had attacks of hysteria (?) in which she becomes stiff with hands contracted and fingers drawn in; all the muscles rigid. Attacks of short duration without unconsciousness.

History of Present Condition.—Some months ago she suddenly fell without entirely losing consciousness, and afterwards had some numbness in right hand and face. Was confined to bed for a few days, and then apparently fully recovered.

On November 26, 1910, after raking the kitchen fire, she fell and was unconscious for about fifteen minutes, and afterwards was only partially aware of her surroundings. She was put to bed and a physician called who suggested the condition that of nervousness or hysteria. I saw her the following morning when she was in a state of semi-stupor; was roused with difficulty and wished to be let alone. There was partial paralysis of the whole right side with well marked partial anesthesia over the same region. The lips and skin were cyanotic. The breathing was stertorous. Pulse slow, firm and hard. Heart sound sharp without murmur, but with accentuated aortic an pulmonary seconds. There was no edema, except possibly slightly around the eyes. Her chief complaint was that of headache and throbbing in the neck. She had not passed urine for twenty-four hours. She was constipated. Blood pressure over 310 Mm. Hg. Pulse 62.

11-26-'10.

Urinalysis.—

Specific gravity 1015

Albumin, glucose and Indican—absent.

Microscopic.

Many pus cells. No casts.

12-5-'10.

Specific gravity 1010

Albumin Trace

Glucose, Indican.....absent

Microscopic..... few granular

narrow hyaline casts, a few pus cells.

Subsequent examinations are similar.

Bedside Notes.—

11-26-'10. Hot pack twenty minutes. 1% solution nitro-glycerine one minim every hour. Magnesium sulphate purge. Following this the pressure fell to 280 on the following day, and rose again on the 28th to 305. Since then the pressure has not reached this extreme height. On the 28th the original treatment was repeated, and the nitro-glycerine continued until the 30th, the pressure having fallen by this time to 240 millimeters. Sodium nitrite 2 gr. every three hours since substituted for the nitro-glycerine, and continued until 12-7-'10, the hot packs being given in the meantime. During this time the pressure ranged between 240 and 210. On the 12-9, the hot wet pack was stopped, and thirty-minute vapor bath substituted, which is still being continued. The pressure range re-

maintained about the same, until the evening of the 12th-14th, when it suddenly rose to 300. This was apparently due to the mental disturbance incident to the nurse going off the case. The thirty-minute hot pack was given immediately, together with a single dose of nitro-glycerine, 2 minims, resulting in a fall of 190 within six hours (a fall amounting to 110 Mm.), with no outward effects, but apparent improvement. Since that time until the 1-31-11, when the patient was last seen, the blood pressure has varied between 215 and 260. Throughout the period of treatment, the patient's mentality has steadily improved; the patient is now able to go about the house and take short walks without undue discomfort. The paralysis has disappeared with the exception of a slight weakness in the right fingers, and some hyperesthesia of the left arm and forearm. The urinary findings remain about the same.

This case demonstrates well the advantage of physical over medicinal measures; the drugs being used only at a time of crisis, and over short periods, while the safe reduction of blood pressure has been maintained largely through the use of eliminative measures.

The foregoing remarks serve, I think, to show to what extent physical measures may be employed in the permanent control of high pressure, even in the most extreme forms.

It is not my desire to belittle the importance and even great value of medicinal measures, but as far as my experience goes, I cannot but feel that in the use of drugs, we are depending upon a crutch, while in the employment of physiological measures, we are working a physical, permanent improvement in the cardio-vascular-renal system.

1831 Chestnut Street.

It is not opportunity that is lacking. It is lack of power on our part. If you take up each job as you come to it, throw yourself into it with your full powers, before long you will be getting ready for the next higher opportunity, before long you will find yourself among the most efficient people of your generation. Opportunity will be chasing after you instead of you chasing after opportunity.—Pres. James, University of Illinois.

MUSCULAR FATIGUE AS AN ANTIDOTE TO HIGH BLOOD PRESSURE IN CERTAIN CASES.

BY LOUIS FAUGERES BISHOP, A. M., M. D., NEW YORK CITY.

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It is a source of wonder to everyone at times that medical literature, both current and fixed, should be so extensive, while the advances of medical science, when summed up at the end of a year, are small in comparison. The solution is that medicine is an art and not a science, and just as the artist finds an infinite variety in his points of view, so each physician in his attempt to record the pictures of his own mind must write his individual paper, however often the subject may have been treated before.

To those of us who are called upon to teach it is always a source of anxiety as to whether our pictures may not be misinterpreted, and yet it is impossible to teach by using only that part of medicine that is beyond discussion. If we teach our students to think, even a little, to supplement recorded facts, we do not fail entirely in our task, though at the same time we have opened wide the doors of carping criticism to the men who never honestly try to paint their own pictures.

Judgment Must Be Used.

In advocating muscular fatigue as an antidote for high blood pressure in some of the most serious cases of high arterial tension I do not wish to assume the responsibility of recommending its trial to anyone else against his own judgment. In my own cases the responsibility was mine, but to other physicians it must be advised, not as a universal panacea but when suggested by their own judgment, stimulated perhaps by what I have to say.

Some years ago I was called one stormy night to see a patient who presented perhaps the most extreme example of high blood pressure of the functional type that I have ever seen. I had known her for some time as an occasional patient, though she had been under the care of a great many other physicians. Her blood pressure was always very high, registering at times upwards to 250 mm. of mercury. Her description of her sufferings would fill volumes—described as terrific tension in the neck and head—and this had gone on incessantly for weeks; it had not been relieved by any form of treatment. On this particular night the woman presented a really pitiable picture, being literally driven to desperation by the sense of tension in her head.

My own resources along conventional lines had long since been exhausted, as had those of many other physicians. I told her that I knew of but one remedy, and that was extreme muscular fatigue. She

replied that she would do anything to obtain relief. I told her to get out of bed, put on her clothing and go out into the storm and walk as far as she could. She obeyed my instructions and walked for several hours in Central Park, arriving home toward morning in a condition of physical fatigue. She told me the next day that she experienced the only relief that she had had in months.

I put her on a course of treatment involving exercise to the point of physical fatigue every day with the most gratifying results. She is still alive and fairly comfortable.

The length of this paper does not allow the details of this case, nor, indeed, have I many blood pressure measurements because the enormous pressure necessary to compress her brachial artery at the time was so painful that I did not often measure it.

I need not remark that I have kept a close watch upon the condition of the heart with reference to the possible onset of dilatation, and the blood and kidneys with reference to changes in these tissues.

I hope no friend of mine will ever have a case as bad as this to handle, because it is hard for anyone to witness the amount of suffering that this woman underwent.

Another Interesting Case.

A gentleman came to me with a very high blood pressure and the history of an attack of unconsciousness, followed by an attack of temporary blindness. An oculist reported hemorrhages in the retina, and numerous medical advisers, when pressed for an honest opinion, said that the usual duration of life in cases of arteriosclerosis reaching the point of retinal hemorrhage was very short.

I was requested to devise a regimen that would give the maximum prolongation of life under the circumstances. I recommended exercise to the point of physical fatigue every day, with a diet designed to provide the lowest necessary amount of heat and energy. This man's blood pressure was soon reduced to safe limits, and his life was prolonged with considerable comfort and enjoyment for over two years, when he died suddenly in bed.

Another case of the same character, on enforced exercise and a strict regimen, in which the prognosis had been absolutely bad, was kept in pretty good condition for five years.

In patients of this type, viz., with very high blood pressures (210 and over) and with competent hearts but showing pressure damage and pressure symptoms, physical labor presents, I believe, a very valuable physiologic therapeutic resource.

These patients nearly always suffer from a false sense of fatigue, so that the beginning of exercise to them is a matter requiring much

strength of mind; this false sense of fatigue disappears after they have walked a while, and they are instructed to walk until fatigue reappears.

In health the effect of fatigue in lowering blood pressure is easily demonstrated.

The theoretic objection to muscular fatigue as a therapeutic measure in high blood pressure advanced by physicians is that exercise raises blood pressure. This is only true in the sense that any physiologic activity primarily raises blood pressure, and it is unnecessary to say that patients with cardiovascular disease should not begin any muscular effort except in the most gradual way. I have often told patients not to run for street cars, or, if they insist upon doing so to walk around the block first.

Hypertension Not to Be Considered as a Symptom.

In advocating a consideration of muscular fatigue as a safe antidote for high blood pressure I would like to register a warning against all methods that attack blood pressure purely as a symptom. I particularly refer to the abuse of nitrites, and latterly, to high frequency currents, both of which seem to act directly by taking away the tone from the muscular elements of the circulatory organs. Exercise, while diminishing the tone of the blood vessels, naturally opening up the blood channels, increases the tone of the heart muscle in a most positive way. Nitrites diminish the tone of the blood vessels, but I believe also diminish the tone of the heart muscle. As to the action of high frequency currents on the heart muscle, I have no opinion.

Patients in whom fatigue is available as an antidote to high blood pressure are found not in the hospital wards nor among those that labor with their hands, but among the people of luxurious, or at least sedentary habits.

Every case of cardiovascular disease presents problems of its own, but I believe that in fatigue we have a resource that must be considered at least in some cases.

54 West Fifty-fifth Street.

THE INFLUENCE OF THE OXYGEN BATH ON BLOOD PRESSURE.

(Preliminary Note.)

BY WILLIAM S. SADLER, M. D.

Professor of Physiologic Therapeutics, Post-Graduate Medical School of Chicago; Director of the Chicago Institute of Physiologic Therapeutics.

More and more attention is being paid to the use of the oxygen bath in certain circulatory, nervous, and cutaneous disorders. The in-

dications for the use of this bath and the CO₂ bath are being carefully differentiated.

Almost without exception we have found, in normal subjects with blood-pressure ranging within 10 per cent of the average for their age, that there occurred practically no reduction in blood-pressure from the oxygen bath; and more especially is this the case when the bath is given at a neutral temperature (93° to 95° F.). That is, therapeutically, we are not able to discover any considerable reduction in blood-pressure after the patient leaves the bath. In a series of cases observed for this purpose, the writer was able to detect a slight reduction in blood-pressure during the course of the bath, amounting in one case to 15 mm.

In most organic heart affections where compensation is fairly well established, the blood-pressure is almost unfailingly reduced by the oxygen bath, and this reduction, in a measure, persists from one to even three hours after the bath. At the same time the effect of the bath on the pulse is greatly to improve the heart-beat by bringing about a regular and rhythmical action of the peripheral circulation.

Valuable in Early Arterial Hardening.

Our observations indicate that the bath is exceedingly valuable in early arterial sclerosis when this condition is accompanied by hypertension. In advanced arterial sclerosis the results have been disappointing, while in case of hypertension presenting no discoverable arterial degeneration, the effect of the bath in several instances has been extremely beneficial; in one case producing a fall in blood-pressure of 35 mm. It is needless to add that in all these cases that the pulse has been improved and the subjective symptoms have been greatly helped.

It may be interesting to note in this connection that in one of the cases used for an experiment in the clinic, and in which the blood-pressure was raised 20 mm., afterwards proved to be a patient suffering from slight mitral lesion. This case only goes to confirm the observations previously made by the use of this bath that it is contra-indicated in all cases of low blood-pressure as well as in valvular diseases of the heart which are not properly compensated.

In connection with the nervous high tension—that is, those cases of hypertension which are not the result of any discoverable visceral lesion or arterial degeneration—the oxygen bath has proved the greatest value in our hands. In these cases the blood-pressure has undergone some manifestations as headache have disappeared. The patient's symptoms have been greatly relieved in several instances, such troublesome manifestations as headache has disappeared. The patient's sleep has been improved and they have experienced a general sedative

effect as the result of the bath. We are prepared to make allowance for considerable psychic effect in the use of this bath. Some of its most favorable influences on these nervous cases are undoubtedly due to the psychic effect—to the fact that they are receiving a new mode of treatment—a novel therapeutic procedure. But after making all due allowance for the psychic effect—which, by the way, should not be despised in these nervous cases—there can be little doubt of the fact that the bath does produce definite effects upon the cutaneous circulation and upon the blood-pressure, as well as to influence the circulation in the muscles immediately underlying the cutaneous tissues, and further, this effect in these cases is that of lowering the tension—the systemic blood-pressure.

The O Bath in Grave's Disease.

Our observation of the oxygen bath in Grave's disease has been limited, in some cases encouraging; in one case it rather increased the cardiac disturbances. We are of the opinion that the technique for the use of the bath in this disorder has not been suitably developed, or that the employment of the bath in such cases should be preceded by an hour's rest on the part of the patient, with an ice-bag applied to the heart fifteen minutes just before entering the bath; at least, in one case, this served to eliminate the unfavorable circulatory effects of the bath. However, our observations of the bath in this connection have been too limited to enable us to offer further suggestions with reference to the modification of technique.

In employing the bath in neurasthenics we have found it advisable to precede its use by some slight heating procedure such as a short electric-light bath or a short hot blanket pack, continuing such treatment to the point of producing beaded perspiration on the patient's skin. In neurasthenics with normal or subnormal blood-pressure, we have found such a procedure greatly to increase the value of the bath.

The Temperature of the Bath.

With reference to the temperature at which the bath operates for the reduction of blood-pressure, our observations thus far are not exactly in harmony with numerous other investigators, especially those on the continent. Several observers have reported using the bath from 90° to 93° F. It has been our experience that the lower temperatures favored reduction of blood-pressure, while the higher temperatures favored sleep, quite the opposite from the findings of certain other observers. Extensive observations on a larger number of cases may or may not confirm this, but thus far our best blood-pressure effects have been secured in the neighborhood of 93 to 95 degrees; whereas, in the nervous cases and the insomniacs, the best effects have

been secured by administering the bath in the neighborhood of 97° F. In fact, we have recently given instructions to our assistants, in all nervous cases, to give the bath at 97° F. The patients seem to stand the bath better at this temperature, and its effects in our hands have been more favorable. We would further add that a bath for the reduction of blood-pressure is best given in the forenoon or before 3 p. m., whereas, a bath given more particularly for reducing the blood-pressure for the purpose of obtaining its sedative effect and thus favoring sleep, is best given after 3 p. m., that is, between 3 and 5 o'clock in the afternoon or between 7.30 and 9 in the evening. The bath should not be given within an hour of bedtime.

32 North State Street.

THE INFLUENCE OF SPINAL MANIPULATION.

BY WILBUR G. HAMLIN, M. D., D. O., CHICAGO, ILL.

In taking up the subject of spinal manipulation or "spondylotherapy," as it has been termed by Abrams of San Francisco, several factors must be taken into consideration, viz.: The organ or part to be treated, the condition of the circulation to the organ or part, the blood supply, the nervous mechanism controlling the circulation to the organ, the situation of the nerve centers which control the circulation to the diseased part and how best to influence these nerve centers by manipulation.

Therefore, that we may get started right, I have given below a chart of the nerve-centers and their functions as nearly as I know them, which if borne in mind in using spinal manipulation as a therapeutic measure will make it possible for the physician to give scientific treatment, which can be depended upon for certain and definite results.

Spinal Nerve Centers and Blood Vessels Supplying the Various Organs of the Body.

GENERAL CENTERS

Sensation, 1 C.* to 4 D., inclusive; motion, 4-6 D., inclusive; nutrition, 6 D.-5 S., inclusive.

*"C" represents cervical; "D" dorsal; "S" sacral, and "L" lumbar.

LOCAL CENTERS.

EYE: For Recti, 2-3 D.; for Ciliary, 1-2-3 D.; Vaso-constrictors, 2-3 D. (Sup. Cerv. Gang., 1-2-3 C.); Vaso-dilators—ant. part of eye—1-2 D.; Vaso-dilators and constrictors, 5-6 D.; Pupilo-dilator, 1-2 D. Arteries, Ophthalmic, Infra-orbital and Arterio Centralis Retinae.

NOSE: Mucous membrane and blood vessels, 1-6 C. Arteries—Lateralis nasi, nasal and nasal branch of the ophthalmic.

BRAIN: Control blood supply, 1-6 C. Arteries, Internal Carotid and Vertebral.

HEAD: 1-6 C.; Vaso-dilators of face and mouth, 2-5 D.; Vaso-constrictors to same, 1-5 D. Arteries, Internal and External Carotid and branches.

EAR: In any disease of the external, internal auditory canals or middle ear (1), 1-2 C., at these points the sympathetic, vagus, glossopharyngeal and occipital nerves may be affected. (2) 1-4 D. where vasco-motor innervation can be controlled. Arteries, Internal auditory, Stylomastoid, Tympanic, Vidian and Posterior Auricular.

PHARYNX: 1-5 C. and 1-3 D. Arteries, Ascending Pharyngeal.

LARYNX: 1-6 C. and 1-2 D. Arteries, Inferior and Superior Thyroid.

TONSILS: 1-6 C.-1-2 D. and (8-9 D.). Arteries, Dorsalis Linguae, Ascending and Descending Palatine, Tonsilar, etc.

TONGUE: 1-6 C. and 1-6 D. Arteries, Lingual.

SALIVARY GLANDS: 1 C.-3 D. Secretory fibers, 1 C.; Submaxillary, 2-3 D.; Parotid, 1-2 C. and 1-2 D. Arteries, branches from External Carotid, Sub-lingual and Sub-mental.

ESOPHAGUS: 1-3 C., 7-11 D.; Direct nerve supply from vagus and sympathetic. Esophageal plexus reached, 8-9 D. Arteries, Esophageal and Inferior Thyroid.

TRACHEA: Motor, Vagus, 1-2 C.; Vaso-Motor, 2-4-5 D. Arteries, Inferior Thyroid.

BRONCHIAL TUBES AND AIR PASSAGES: Treat, Vagus 1-2 C., 1-6 D. Arteries, Bronchial.

LUNGS: Thoracic ganglia, 1-2 D.; Pulmonary veins, 5-6 D.; Vaso-motors, 2-7 D. Arteries, Bronchial.

HEART: Rhythm controlled, 7 C., 1-2-3 D.; Vaso-motors to valves, 2-4 D.; Center in Corpora striata, 1-5 D. Arteries, Right and Left Coronary.

STOMACH: Cardiac orifice, 6-7 D.; Pyloric orifice, 4-5 D.; Secretion, 6-9 D. Arteries, Gastric, Hepatic and Splenic.

LIVER: Vaso-motors, 6-10 D.; Gall bladder and bile duct, 6-7 D.; Vaso-constrictors of portal vein, 3-11 D.; Vaso-constrictors of Hepatic Artery, 6-12 D.; Vaso-dilators of Hepatic Artery, Vagus, 6-12 D. Arteries, Cystic and Hepatic.

SPLEEN: Vaso-motors, on left side, 8-12 D. Arteries, Splenic.

PANCREAS: Vaso-constrictors, 8-9 D.; Vaso-dilators, 12 D., 1 L. Arteries, Splenic, Hepatic and Superior Mesenteric.

SMALL INTESTINES: Peristalsis controlled, 9-12 D. Vagus. Duodenum: Vaso-motor, 1 L.; (Pancreo-duodenal plexus) Motor to upper part, 4-5 D.; Motor to lower part, 8-9 D. Jejunum: Vaso-constrictors, 1-5 L. (Gauerbach's plexus control peristalsis.) Ilium: Vaso-constrictors and dilators, 5-11 D. Arteries for small intestines, Superior and Inferior Mesenteric, Gastric, Hepatic and Splenic.

LARGE INTESTINES: Colon: Peristalsis, 1-4 L.; Vaso-constrictors and dilators, 5-11 D. Cecum: Vaso-constrictors and dilators, 1-4 L. Vermiform Appendix: Vaso-motors, 11-12 D., 1-2 L. Arteries, Superior and Inferior Mesenteric, Gastric, Hepatic and Splenic.

RECTUM: Sphincters, 2-3-4 S.; Defecation center at 2-4-5 L.; Vaso-dilators and constrictors, 9-12 D., 1 L. Arteries, Superior, Middle and Inferior Hemorrhoidal and Sacra Media.

KIDNEYS: Renal splanchnics, 11-12 D.; Renal plexus, 1 L.; Vaso-dilators and constrictors, 9-12 D., 1 L. Arteries, Renal.

URETERS: Upper part, 10 D.; Lower part, 1 L. Arteries, Branches of Renal, Spermatic and Internal Iliac.

RECEPTACULUM CHYLI AND DUCT: Center, 5-12 D. and 2 L.

THYROID GLAND: Vagus, Middle and Inferior Cervical Ganglia. Arteries, Superior and Inferior Thyroid.

PLEURA: 3-4 C., 1-7 D. Arteries, Internal Mammary and Bronchial.

UTERUS: (Uterine plexus to cervix and lower part of body.) Cervix, 9 D.; Os, 1-5 S.; Vaso-motors, 12 D., 2-5 L.; Parturition center, 2 L. Arteries, Ovarian and Uterine.

FALLOPIAN TUBES: 12 D., 2-5 L. (2 L. especially.) Arteries, Ovarian.

VAGINA: 12 D., 2-4-5 L. and 4 S. Arteries, Vagina.

OVARIES: Circulation controlled, 9-12 D.; Pain, 10 D.; Vaso-motors, 9-10 D. Arteries, Ovarian.

TESTES: Control Circulation, 10-11 D.; Vas Deferens and seminal vesicles, 12 D., 2-5 L. (Branches of lumbar and spermatic plexuses, internal pudic nerve and inferior pudendal branches of the genito crural nerve.) Arteries, Spermatic and Superior Vesical.

PENIS: Spermatic and erection center, 2 L. (Hypogastric plexus and internal pudic nerve.) Arteries, Superior Vesical and Dorsal Artery of penis.

URETHRA: 4-5 L.

BLADDER: Neck, 2-5 L.; mucous membrane, 4-5 L. and 5 S.; sympathetic center, 4-5 L.; motor, 11-12 D.; sphincter urethra, 3 S. (Hypogastric plexus to upper part and sacral plexus to lower part.) Arteries, Superior, Middle and Inferior Vesical Obturator and Sciatic. (In female, additional branches from Vaginal and Uterine.)

PROSTATE GLAND: 10 D., 4-5 L., 1-3 S. Arteries, Inferior Vesical and Pudic.

DIAPHRAGM: Motor, 3-4-5 C.; Vaso-motor, 11-12 D. Arteries, Phrenic, Internal Mammary and Lower Intercostals.

ARMS: Motor, 5-8 C. and 1 D.; Vaso-motor, 2-5 D. Arteries, Axillary, Branchial, Ulnar and Radial.

LEGS: Motor, 3 L. to 3 S.; vaso-motor, 3 L. to 3 S. Arteries, Femoral, Popliteal, Anterior and Posterior Tibial.

VENA-CAVA INFERIOR: 5 L.

Spinal manipulation for definite therapeutic effect is applied on much the same principle as any other therapeutic measure would be used, the desired end-results being either *stimulation* and *sedation*. Another common way of referring to this treatment and one which will be followed in this paper is *Stimulation* and *Inhibition*. Do away with these two procedures and you do away with the fundamental principles of practice in all schools of medicine. If a patient's assimilation is poor, you stimulate it; if his elimination is poor, you stimulate it; if his heart is slow and weak, you stimulate it; if his heart is fast, you inhibit; if his nervous system is excitable, you inhibit or sedate it; if he has cerebral congestion, you displace the excess of blood to the periphery; if he has cerebral anemia, you displace the blood from the periphery to the brain, etc., etc. These are rather simple statements, but are the facts underlying the entire practice of medicine and consequently have to be considered in spinal manipulation or spondylo-therapy.

Some Statements Questionable.

Having taught this subject for a number of years, I find that there are several points made in the various text-books on physiology and by professors of physiology, which, while true from their point of view and their methods of influencing nerves and circulation, are not safe for one to follow with his manipulation and thus are quite confusing to the student. One of these points which I will mention here is the influence of stimulation of the splanchnic nerves. The physiologist tells us that stimulation of the splanchnics causes constriction of the splanchnic vessels. This, as I have stated before, is true from their point of view, but their method of stimulation should be compared with that employed by the spondylotherapist, and I think that of itself will be sufficient to convince the practitioner that he cannot follow the physiologists' teaching if he would bet the desired results. For illustration: The reader will perhaps remember that in college he laid bare the splanchnic nerves of a frog, also that he opened the abdomen and thoracic wall in order to observe the influence of splanchnic stimulation on the abdominal vessels. He will also remember that he used a current of electricity which was automatically interrupted, and that the influence of the stimulation caused at first *dilatation* of the vessels, but by continuing the stimulation *constriction* of the vessels followed, the heart became congested and slower and naturally blood pressure was raised.

Here is where we differ in our methods and results. We do not

lay bare the nerves, but apply stimulation over the skin corresponding with the origin of the splanchnic nerves. The first observation of the physiologist in the above experiment is the sum total of the spondylotherapist's stimulation, viz., splanchnic vessel dilatation. If the physiologist stopped his stimulation at the point where he first observed the influence of his electric stimulation, then we would have a paragraph which would read: "Splanchnic stimulation causes *dilatation* of abdominal vessels," instead of saying that it causes *constriction*. The question is always raised, "Why does continuation of the electrical stimulus cause constriction?" The only answer which I can give is that continuation of the stimulus amounts to over-stimulation, which in time amounts to inhibition, and results in constriction. At all events, inhibition, secured by spinal manipulation, results in constriction of the splanchnic vessels.

As proof of the results mentioned above I refer the student to the use of the sphygmomanometer and sphygmograph, from the careful use of which clinical proof will be forthcoming which will convince the most confirmed skeptic.

How Stimulation and Inhibition Are Applied.

Before proceeding further with this subject, it may be well to describe the manual method of applying stimulation and inhibition. To stimulate a certain nerve center, first, locate the situation of the center; second, know the effect of stimulation of that center, and third, the result desired to be produced upon the circulation, sensation, motion, etc.

Stimulation of a center is produced either by a few strokes or taps upon the spinous process or over the transverse processes on either side of the spinous process, or it may be produced by a few deep proddings of the thumb between the transverse processes. Care must be exercised not to over-stimulate, nor to cause undue pain to the patient, as usually the tissues at the point where treatment is necessary are sore and congested.

Inhibition is that influence brought to bear upon a center which will cause it (the center) to diminish the impulses transmitted to and from it. This is done first by locating the center or centers to be treated and then, with the patient lying on his chest, place the thumbs over the spaces between the transverse process, make steady pressure, beginning with the minimum, gradually increasing to the maximum amount desired; hold steadily for 2, 3 or 5 minutes and then slowly release the pressure to the minimum before removing the hands. In either stimulating or inhibiting the cervical centers it is more convenient for the physician to have the patient lying upon the back and then use the tips and balls of the fingers. As one becomes familiar

with locating the centers, inhibition may be applied at any point along the spine with the patient lying on the back.

Students and often physicians will say that they cannot get the results which I claim for spinal manipulation. The fault is usually with the manipulator. For instance, to get definite results on a certain organ or condition existing in that organ, the first thing to be learned is the organic or functional condition of the part to be treated and how to influence the center or centers to overcome the condition and the care with which the treatment is applied. If the treatment is not applied to the right centers, results cannot be expected. If the wrong form of treatment is applied, or the right form in a wrong way, satisfactory results will not be had.

The application of inhibition is much more exacting on the physician than stimulation because the hand must be held steady for a period of 3 to 12 minutes. The patient should always be instructed to refrain from talking or moving while you are applying this treatment, as the least movement which will increase or decrease the pressure which is being exerted results in more or less stimulation and consequently the sum total of results will not be as good.

Results of Stimulation Upon Blood Pressure and Pulse Rate as Shown by Sphygmomanometer Readings.

Below are recorded a few of many records made on normal individuals. In each case the subject was required to lie prone for about fifteen minutes before the first reading was made, in order to determine the normal pressure. The second reading was made ten minutes and the third thirty minutes after the manipulation recorded in each case. The treatment in each case was applied over the transverse processes.

- (1) Normal reading, 132 mm., hg. Pulse, 70.
Stimulation, 1-6 cervical.
Blood pressure, 10 minutes later, 141. Pulse, 67.
Thirty minutes' stimulation, blood pressure, 148. Pulse, 65, tense.
- (2) Normal reading, 134 mm., hg. Pulse, 74.
Stimulation, 6-12 dorsal.
Blood pressure, 10 minutes later, 126. Pulse, 82.
Thirty minutes later, blood pressure, 120. Pulse, 86, quite compressible.
- (3) Normal reading, 130 mm., hg. Pulse rate, 76.
Stimulation, 4 and 5 lumbar.
Blood pressure, 10 minutes later, 144. Pulse, 70.
Thirty minutes later, blood pressure 147. Pulse, 69.

All these tests were made on persons in normal health, between the ages of 28 and 36 years.

At a future date I will give a number of blood pressure readings found in a variety of disease-conditions and the encouraging results of stimulation and inhibition.

163 State Street. (To be continued.)

THE FORUM

It is to be hoped that this department may be of real, definite help to readers of *PHYSIOLOGIC THERAPEUTICS*. It will be, but in a far greater degree if more will join in the discussions.

Since the next (May) issue will be the first of the new volume, it has been thought best to make the topic for discussion one which can be of direct value to the managing editor and through him to every reader. The subject, therefore, will be:

How can PHYSIOLOGIC THERAPEUTICS be made better?

This does not call for eulogies or recommendations. If you can consistently make such statements—and want to—make them to your friends. The man at the helm wants to see the stars and be guided by them—not merely enjoy the “moonlight on the waters.” Send in your helpful suggestions—before the 5th of April, please.

Physical vs. Pharmacal Remedies in Hypertension.

Dr. H. A. Hare, 1801 Spruce St., Philadelphia, Pa.:—From both a theoretical and practical standpoint hypertension may be due, on the one hand, to spasm of the circular muscular fibres of the vessels, or, on the other, to arterio-capillary fibrosis. In many instances, without doubt, a condition of spasm precedes the fibroid change with its characteristic fixation, and also, without doubt, many cases owe their high tension to the presence of both spasm and fibrosis, going hand in hand. It is evident that we can accomplish much less in those cases in which high tension is due to fibrosis than we can in those which are due to spasm. This certainly is true in regard to the influence of drugs. It is not, however, so true in regard to the influence of remedial measures other than drugs, since rest, massage, Swedish movements and baths, when properly administered, undoubtedly seem to be capable of arresting the progress of the fibroid change in the smaller vessels and perhaps actually producing a definite improvement in their elasticity. Further, these remedial measures, by restoring circulatory equilibrium, overcoming ischaemia in one place and hyperaemia in another, not only do good, in that the nutrition of the parts supplied by these vessels is bettered, but also do good because the establishment of circulatory equilibrium, or circulatory balance, permits the heart to perform its functions with much less effort. There can be no doubt that insufficient attention is given to the value of non-medicinal measures in the treatment of cardio-vascular disease. However valuable digitalis and other circulatory stimulants and the nitrites may be, the value of rest, massage and similar measures in cases of hypertension is certainly of equal degree. Many of the betterments, or cures, which follow the visit of a patient to one of the celebrated health resorts where cardio-vascular lesions are cared for, could be equally well obtained at home if the patient would lend himself to the treatment at home as completely as he does when he is away, and if the physician in general practice would train himself to be as skillful in the employment of non-medicinal measures as he is in the use of drugs. Given a case of arterio-capillary fibrosis with some spasm I

feel confident that a greater fall in blood pressure can be produced, and with greater permanency, by these measures than if the nitrites are administered.

Dr. Joseph L. Miller, 150 Michigan Boulevard, Chicago:—I believe until we know the exact cause of the high blood pressure and what its function is, we cannot treat the trouble intelligently. It is probably true that 95 per cent of cases of high blood pressure—180 mm. or more—are due to a chronic interstitial nephritis, even if the urinary findings may be almost negative as regards albumin and the presence of casts. The belief at the present time is that this high blood pressure is a compensatory matter—an effort to get more blood through the kidney and thus to increase the amount of elimination. For this reason it seems to me that the treatment of these cases, excepting where the pressure is very high, should be undertaken only after considerable thought, as we may by reducing the pressure interfere with what nature is trying to do. Regarding those cases, however, with a pressure of 200 mm. or more, where the danger to heart and blood vessels is considerable, treatment should be instituted.

The various vaso dilators, like nitroglycerin, sodium nitrite or erythrol tetranitrate, are exceedingly transitory in action and in many cases do not affect pressure at all. For this reason it has seemed to me that the eliminative treatment through the bowels and skin is a more rational procedure and certainly gives equally good results regarding the lowering of blood pressure. Any of these measures are transitory in character and almost invariably the pressure returns to its previous level after they have been discontinued. However, with our present knowledge of the trouble, such an eliminative treatment is apparently the most rational we can undertake.

I think we must be very careful in drawing conclusions in regard to the value of any form of treatment in these cases, inasmuch as there is often very marked variation in pressure without any special form of treatment, and if the treatment should be instituted at this time, we might ascribe the changes to it.

Dr. Henry Snow, Norwood, Ohio:—In the treatment of hypertension I have been able to obtain satisfactory and apparently permanent results by the use of the autocondensation couch with the D'Arsonval current. I have had little or no experience with any other method or treatment, and as I could not well ask for any better results than I have so obtained I do not at present expect to use any other.

But I have been able to do more than simply reduce the hypertension. In every case so far treated, and I have treated now about a dozen cases, I have relieved the arterio-sclerosis lying back of it—that is, the arteries have been softened—in most cases remarkably so. In fact, in several of my cases the arteries which I could feel have seemed to become entirely normal, and I firmly believe that in other cases the same results would have followed if the patients had been willing to continue the treatment long enough. Other cases are still under treatment. In all cases the improvement in general health has been marked. The patients themselves also declare that all disagreeable symptoms and feelings have been abolished. This result has been brought about by continuing the treatment for a long time—

long after the hypertension has been relieved. From six months to one year has been necessary in most of my cases, but quite a change for the better can be noticed after two or three months. In age my patients have been from 40 to 85 years. In the very aged, of course, I have been able only to relieve; but the relief has been most appreciated. I use a Grosse Flamme coil and the high frequency apparatus made by the same firm. The couch current is a very heavy one. I have no meter and so cannot tell just how much, but I use from ten to fifteen amperes on the primary and from ten to twenty milliamperes on the secondary of the coil. The spark gap used is from one-half to one inch. The current is too severe for use with a vacuum electrode, especially if the bi-polar method were employed, as the patient would be apt to receive a severe shock. It is only intended for couch treatments.

Dr. L. C. Charbonneau, Brooklyn, N. Y.:—In hypertension, whether due to arteriosclerosis, pathologic conditions in the liver, kidneys, or any other organ, acute infectious diseases, to toxemia, the liquor habit, or to advancing years, the physical agents afford us the better means of combating the condition. Medicine will frequently carry us along over an approaching crisis, but to depend upon drugs to restore lost function, to increase elimination and to keep the emuretries open will necessitate a continuance of medication. The physical agents restore deranged function and faulty metabolism. Diet and exercise will do the rest.

Dr. Curran Pope, Louisville, Ky.:—The subject of hypertension is one of the most important that the physician has to contend with. I have treated hundred of cases showing this condition, and after fifteen or twenty years of experience have come to the conclusion that drugs are practically worthless (save in emergencies), with possibly the exception of the iodine preparations. Physiologic therapeutics unquestionably offers, in my opinion, the only rational and satisfactory method of meeting the condition. An equable climate, that permits of out-door exercise, is advantageous. Exercise, gentle, interrupted and sufficient to produce a gentle perspiration, will lower the tension and produce the various tissue changes we desire. The high-frequency current, in the shape of auto-condensation and conduction, unquestionably offers a field of usefulness that I am sorry to say is too little utilized by the profession at large. Manual massage and vibration are useful accessories, acting along similar lines to exercise and especially adaptable to weak, non-ambulatory cases. I can speak in favor of the oxygen bath and expect to report some experimental and clinical work along this line in the near future. The careful combination of diet, exercise and physiologic therapeutics, is, to my mind, the ideal method of handling these cases, to say nothing of the advantage that comes from more or less frequent contact of patient and physician. They are cases that need medical supervision at all times.

To-day's duty is the only true
provision for tomorrow.—G. Mc-
Donald,

REPRINTED EDITORIALS

FEEDING AND FASTING.

A medical man is never on safer ground than when he is delivering himself in public on eating and drinking. Given a fairly large mixed audience it matters not what he says should be eaten and drunk, a portion of the auditors will cheer him and the remainder will silently acquiesce. One evening last week Dr. Stenson Hooker delivered a lecture to quite a sympathetic audience on "Feeding and Fasting." The occasion was a meeting of the members of the Psycho-Therapeutic Society, and he told the members that most of us are feeding wrongly; we take the wrong articles of diet; we eat too much; we eat at wrong times and in the wrong way; and the consequence is we are a disease-ridden people, and are likely to be until our ignorance and our sin of gluttony are removed. If we want to be really healthy all luxurious living and gluttony must go, and these must be replaced by simplicity of life in all things. In the two meals a day plan lies a great preventive of catarrhs, influenza, and a host of other diseases under the form of dyspepsia, gout, liver affections, etc. A longer interval between meals, he was certain from his own experience and that of patients, was one of the cardinal secrets of a perfect digestion, and, therefore, most highly conducive to health generally. If it were possible for us to take our first meal about 11 or 12 and our second at 6 or 7 in the evening we should be all the better for it. The fasting cure was essentially a cleansing process, and was especially good for such diseases as gout, rheumatism, dyspepsia, internal troubles and growths, diabetes, gravel, obesity, paralysis, blood diseases of all kinds, skin affections, etc. But certain conditions were advised. Rest of mind, no business, healthy surroundings, plenty of fresh air, correct breathing in the open air, and, after the first week for most patients, a good deal of bodily rest and no long fast should be undertaken without medical watching.—Editorial in *The Medical Times* (London), Dec. 24, 1910.

THE MODIFIED BRAND TREATMENT IN TYPHOID FEVER.

Although the so-called Brand method of treatment in typhoid fever has unquestionably reduced the mortality of this disease in hospital practice, it has never proven popular with the profession engaged in private practice, nor is it appreciated by the patients who are subjected to it. Brand did not originate the use of cold water in typhoid fever. Dr. Robert Jackson used it in 1774; Dr. Wright, a West Indian physician in 1777; James Currie, a ship surgeon of England, in 1797; Dr. Nathan Smith, of New Haven, in 1798; and Dr. Hiram Corson, of Montgomery County, Penn., a graduate of the University of Pennsylvania, in 1828, continued its use in his practice for over fifty years. Brand, however, popularized it by his writings in 1861, and it was enthusiastically taken up by the hospitals of the world. Despite the excellent results recorded, it failed to gain in popularity among the physicians in private practice, and, in that field, has practically passed out of use. The failure to recognize the fact

that the use of water in typhoid fever is a valuable remedial agent which cannot be replaced by any other method or drug, is unfortunate. This neglect has been partly due to the fact that many physicians saw no further into the effects of the cold bath than the reduction of temperature, and felt that temperature could be reduced more easily by drugs. This habit led to an abuse of the coal-tar line of chemicals, with unquestioned harm to patients. Water, properly employed, in typhoid fever, has a wider range of usefulness than mere temperature reduction, and has an effect in reducing mortality in those cases which never manifest an alarmingly high temperature. Its greatest effect is in the stimulation of the nervous system, in the determination of the blood to the peripheral circulation, in increased digestive powers, in checking emaciation, and in adding to the comfort of the patient.

Dr. Thompson's practice is to use the tub bath at 75 degrees whenever the patient's temperature reaches 102.5 degrees, insisting on gentle and continuous friction of the skin by two nurses during the entire continuation of the bath. While fifteen minutes is the ordinary duration of the bath, he has found it beneficial, in many cases, to limit the bath to eight or ten minutes, and to have the temperature at 80 degrees. He gives an alcoholic stimulant twenty minutes before the bath.

Dr. James Tyson insists on having the patient void urin before entering the tub, and usually prefers a temperature of 70 degrees. Brisk rubbing is kept up during the bath, and an ice cap is kept on the head. If the temperature has returned to a point as high as 102.2 degrees three hours after the bath, it is repeated. If it is 102 degrees or above 101 degrees when taken three hours after the bath, the bath is given an hour later; if 101 degrees or above 100 degrees, the bath is given two hours later; and if below 100 degrees and above normal, it is given in three hours. It is given at any time when the temperature reaches 102.2 degrees if three hours have elapsed after a previous bath. No more than eight baths are ever given in the twenty-four hours.

Dr. Alfred Stengel's rules are: Take temperature, pulse, and respiration rate every three hours. Use the sponge bath at temperature of 101.2 degrees; the tub bath at 102.4 degrees. Temperature of water, 70 degrees. Ice caps to head continually. The tub is only used in those cases presenting definiteness of symptoms; those that begin in a mild way are not tubbed unless some especial manifestation arise. If the patient is very nervous, or does not bear the bath well, it is discontinued. It is not used in case of children.

Dr. Musser has the temperature, pulse, and respiration rate taken every two hours. He employs the sponge when temperature is found at 102 degrees, and the tub bath at 103 degrees. The bath is begun at a temperature of 80 degrees, and it is then gradually reduced to 70 degrees. Ice cap to head continually. He takes the temperature during the bath, and again fifteen minutes following.

Leibermeister, forty years ago, advised the warm bath at 90 degrees, gradually cooled. Dr. Reiss, of Berlin, uses the warm bath at 88 degrees for several hours at a time, or until the rectal temperature falls to 100 degrees. Many use the ice cap to the head as a routine measure when the temperature reaches 101 degrees.—Editorial in *The Medical World*, Jan., 1911.

CONSERVATIVE ELECTROTHERAPY.

Electrotherapy frequently has been held at a low estimate by the profession because of the extravagant and apparently unreasonable claims made by many of its advocates, who proposed to cure everything with electricity to the exclusion of all other methods.

It was not unnatural, therefore, that those unfamiliar with the use of this measure, should go to the other extreme and believe electricity of absolutely no therapeutic value whatsoever.

Now comes the sane and conservative physician who is fair enough and broad-minded enough to ascertain for himself the merits of the various electrical modalities and to fit them in with his other therapeutic aids. He finds them perfectly compatible with his drugs and with surgical procedures and most valuable allies, enabling him to accomplish results hitherto impossible.

When we say conservative we mean careful and using discernment and judgment. It does not mean condemning everything that is new because one is unfamiliar with it, but it means investigating it carefully, but fairly, and resting one's judgment and use upon the result.

Each electrical modality meets certain therapeutic or clinical indications. When these are present the appropriate measure will give positive and reliable results, just as would be expected of a drug under like circumstances.

To practice medicine with but one drug would be obviously absurd, and to expect to use one form of electricity for all conditions is equally so.

A few years ago the X-ray was lauded as a cure for almost every disease that human flesh is heir to. Then came the reaction and it was claimed by many to possess no therapeutic properties. This equally erroneous position could not be long maintained, and now we recognize its absolute value in certain diseases; its relative value in others, and finally, its utter uselessness in a considerable number.

What is true of the Roentgen ray is equally true of galvanism, high frequency, vibration, etc.

We must look upon each of these from the standpoint of its physiological action and make use of it accordingly.

Drugs, diet, hygiene, electricity, surgery, etc., all have their appropriate use, and in the hands of the skillful and broad-minded physician work harmoniously with one another for the benefit of his patient.—Editorial in *The Medical Brief*, Jan., 1911.

A NEW FOOD FOR DIABETICS.

Attention has recently been directed to the soy bean (Friedenwald and Ruhrh, *American Jour. of Med. Sciences*, December, 1910), which deserves an extended trial both as a food and as medicine in diabetes mellitus. Originally indigenous in parts of Asia this leguminous plant has found its way slowly into Europe, where it was grown in botanic gardens chiefly for show. It has, however, been known in the United

States for many years, but has been grown chiefly as forage crop, little attention being paid to its use as food for man.

The beans may be eaten as vegetable, in soups, sometimes picked green, boiled and served cold with a sprinkling of soy-sauce and sometimes served as salad. The bean forms the basis of the so-called soy-sauces used in condiments all over the world. The large amount of nitrogen which the beans contain probably accounts for the small amount of meat and other animal food taken by the Japanese. According to dietary studies, the nitrogen from the beans is readily absorbed, especially if taken in a mixed dietary.

For our purpose, the most striking thing about the bean is the fact that it contains no starch, or at least a very small quantity, which is strange when one considers it resembles the various beans very closely and all other varieties of beans are rich in starchy material. This fact suggests the use of the bean in various conditions such as diabetes and for infant feeding. When we observe the rather limited dietary to which the diabetic patient is restricted, any addition must be greatly welcomed.

The beans may be taken as vegetable by soaking them for about 12 to 16 hours until the skins come off, stirring until the skins rise to the surface and can be removed and then boiled in salt water or with bacon until soft, and seasoned with pepper, salt and butter. When the bean is not available, the gruel flour from the soy bean is even more serviceable. The percentage of protein in the flour is almost one-third greater than the amount in the whole bean. It can be used either as gruel, broth or to make biscuits. For the latter, a small amount of wheat flour will be necessary.

Most patients readily take to these preparations and do not object to the taste even after a long time. The percentage of sugar voided was always lower than after the usual diabetic diet with gluten bread. In some cases the reduction was so pronounced that it is not excluded that some actual curative effect may be present, such as is seen in some cases under Van Noorden's oatmeal diet.—Editorial in *Merck's Archives*, Jan., 1911.

Keep thy shop and thy shop
will keep you.—Franklin.

* * *

If misfortune hits you hard do
you hit something else hard?"—
Matthews.

* * *

Those who are constantly lamenting their ill luck are often, in some way or other, reaping the consequences of their own neglect, mismanagement, improvidence or want of application.—Marshall Field.

ABSTRACTS AND TRANSLATIONS

ON HYPERTENSION.

The Control and Treatment of Hypertension and Arteriosclerosis.
—Henry L. Elsner, of Syracuse, N. Y., in a paper read before the American Climatological Association states that cardiovascular and arterial changes are the cause of the largest number of deaths after the fortieth year. There is a physiologic hyperplasia of the intima in early life. One must consider the separate artery as an organ whose task is multiple, and the performance of its daily undisturbed work is attended even during the earliest years of life with a compensatory deposit for the preservation of these organs and the continuity of the circulation. As soon as this physiologic hyperplastic change of the intima, because of age, overwork, strain, toxemia or any other cause, is forced into a stage of hypertrophy, we have the beginning of arteriosclerosis. Hypertension upon which we fail to make a favorable impression by rational treatment is already associated with changes in kidney, heart or within the splanchnic area.

Hypertension will often lead to a strong suspicion of renal invasion. Dr. Elsner discussed the influence of tobacco and quoted Lauder Brunton's experiments in which a rise of blood pressure is noted after the use of nicotine. This is greater than from any known drug except the suprarenal extract. It is due chiefly to contraction of the arterioles. Coffee also raises the pressure, and the speaker advocated a "caffeine-free" coffee, from which all but about 10 per cent of the caffeine had been eliminated. The author had considerable experience with this caffeine-freed coffee, and is very positive that it is not followed by the baneful effects on the heart following the use of ordinary coffee, and it is a coffee which may be given without fear to those who cannot take coffee at night without being kept awake. It is not a substitute for coffee, but a true coffee. No difference is apparent in the bean and there is no difference in the taste when properly prepared. This coffee may be used by those who do not bear ordinary coffee well, those who have arteriosclerosis and irritable hearts. The dietetic management of these patients is most important. Many patients with angina pectoris have promptly lost their lives because of a single dietetic indiscretion.—*Boston Medical and Surgical Journal*, Nov. 7, 1910.

Treatment of Arteriosclerosis.—Gordon sets forth four cardinal principles to be observed. Toxæmia should be combated; the circulation should be equalized and hypertension reduced by the removal of mechanical causes which produce repletion of the vessels, peripheral resistance, and increased force and frequency of the heart's action; the damage sustained by the arteries should be repaired as far as possible, and complications and coincident disorders be treated.

To meet the first indication—the relief of toxic conditons of the blood, whether of chemical or microbic origin—it is important to eradicate syphilis, plumbism, malaria, alcoholism, gout, nicotine poisoning, indicanuria or any other disorder which a careful search may disclose. It is needless to enter into the details of treatment for these disorders. At the same time elimination from the skin, kidney and bowel ought to be promoted.

The removal of mechanical causes is of vital importance. Repletion of the blood vessels by excess of food or fluid; excess of physical and mental exercise; too sudden or too great a reduction of atmospheric pressure, and all other factors that tend to unduly quicken the circulation or add to its normal burdens are instrumental in producing a loss of elasticity in the vessel walls followed by a compensatory increase of fibrous tissue. Whatever can be done, therefore, to equalize the circulation is of distinct advantage in retarding the progress of the disease. The sudden and fatal complications of arteriosclerosis are frequently due to an overloaded stomach, a debauch, an overstrain of the physical powers, or too violent mental or emotional excitement. The beneficial effect of a calm life is often observed in the aged, who, with arteries hardened for years, live in comparative safety and comfort. In such persons the heart and kidneys have usually escaped serious damage.

Inasmuch as the ultimate effects of arteriosclerosis are owing chiefly to its coincident or complicating disorders, too much stress cannot be laid upon their management. If the heart and kidneys, especially, can be held to their work, imperfect though the work may be, the diseased blood vessels may be able to perform their functions for years.

Having laid down the general principles by which the physician should be governed, we are in a better position to discuss special measures and their peculiar indications. The diet should be carefully regulated as to quantity and quality. It should be light, wholesome, simple, easily digested and adapted to the requirements of the case and idiosyncrasies of the individual. Excess of proteids should be avoided and all useless articles of food be interdicted, such as pastries, highly-seasoned dishes, strong tea, coffee or cocoa. Alcoholic stimulants and tobacco had better be omitted. Even the use of water can be abused. One of the writer's patients, who died of chronic nephritis, used to drink several gallons of water a day, despite the warnings given him; and the amount of damage sustained by his blood vessels from overdistension was incalculable. There is no inflexible rule for diet. A close study of the symptoms, and regular examinations of the urine and other excretions, will enable the practitioner to advise a diet which will not produce gastro-intestinal disorders with the information of toxins. The golden rule is to strike the proper balance between the intake of food and proper elimination.

Exercise is a matter of importance. In the early stages of arteriosclerosis it is promotive of good, provided it be taken in moderation. Even with a failing heart, and in appropriate cases, resistance movements are serviceable.—*Medical Standard*, January, 1911.

Lactic Acid Bacteria in Arteriosclerosis.—Metchnikoff has continued his research on the poisons generated by the ordinary bacteria in the intestines, and believes that his experiments have now established beyond question that small doses of paracresol and indol, acting on the organism over a longer or shorter period, are capable of inducing chronic lesions of the nature of sclerosis. Such lesions are the very ones that are most frequently encountered in senility. His latest experimental and chemical research further demonstrates that the phenols and indol found in the stool and urine are not the excreta of

our tissues, but are the products of the permanent microbial flora. He declares it is not unreasonable to assume that the digestive tract can constantly harbor an injurious flora, the source of chronic poisoning leading to arteriosclerosis; helminths are so frequent among certain primitive peoples that they may almost be regarded as the normal "physiologic" fauna, and yet they are liable at any moment to entail more or less serious disturbances. Mathis and Leger announced last year that they found helminths in every native examined in Indo-China. It is established now beyond question that the *Bacillus perfringens* and the colon bacillus produce poisons which can be absorbed by the normal walls of the intestines and are capable of inducing serious lesions in vital organs, arteries, kidneys, liver, etc. He then discusses how to prevent this injurious action from the poisons thus engendered in the intestines. These same lesions occur in the horse and rabbit, which eat no meat; consequently, a meat diet cannot be the main cause, and experiences are showing that with a mixed diet there is really less production of these poisons. On the other hand, it seems to be possible to check the production of indol by these bacilli by fighting them with certain other bacilli, especially lactic-acid bacteria. The simultaneous presence of Bulgarian lactic-acid bacilli in a culture medium with the colon bacilli seems to render it impossible for the latter to attack the nitrogenous elements in the medium, and hence there is no production of substances of the aromatic series. Metchnikoff reiterates that it is on this principle of letting Greek fight Greek that we may hope to find the solution of the problem of the suppression of the poisons which are responsible for the development of the sclerosis in our organs, and consequently of their premature wearing-out.—*Annales de l'Institut Pasteur*, October, 1910.

Hints on the Physical Therapy of High Blood-Pressure.—The careful employment of physical therapy is able materially to lower or raise blood-pressure in many cases.

The following methods are exceedingly useful in the treatment of high blood-pressure:

1. The oxygen bath.
2. The Scotch rub, consisting of two basins of water, temperature of 120 degrees and 32 degrees respectively, with friction mitts several applications are made to each part of the body from the hot water 120 degrees, followed by one brisk friction from the cold.
3. Electric-light baths, followed by cold mitten friction, etc.
4. Arc or incandescent light to the liver, followed by the neutral bath. (Warm baths should be moderately long, cold baths very short.)
5. The hot blanket pack, or hot hip and leg pack, followed by the cold towel rub.
6. The application of the heating compress to the legs, to be worn at night, preceded by the hot and cold leg bath.
7. High frequency electricity—auto-condensation.
8. Massage, vibration, etc., followed by short periods of rest.
9. Wearing the moist abdominal bandage at night.

A daily line of treatment for high blood-pressure, taken from the records of a typical case as treated at the Chicago Institute of Physiologic Therapeutics, runs as follows:

First day. Arc-light to liver, followed by the Scotch rub. High frequency (auto-condensation 12 min.).

Second day. The oxygen bath (97° F.), followed by rest.

Third day. Fomentations to the liver, followed by short electric-light bath and cold mitten friction.

Fourth day. Deep general massage. Auto-condensation.

Fifth day. Incandescent light to liver, vibration (mild) to spine, followed by the Scotch rub.

Sixth day. The oxygen bath—standard technique.

Dietary, rest cure and other detailed attention to individual symptoms, not neglecting proper psychotherapy.

The following is a typical procedure for three days a week treatment given on alternate days:

Monday. The oxygen bath—standard technique.

Wednesday. Arc-light to liver, hot foot bath, followed by the Scotch rub.

Friday. Fomentations to liver, short electric-light bath, cold mitten friction, deep massage or vibration.

Secondary Low Blood-Pressure: Abnormally low blood-pressure is helped by the judicious employment of physical exercise, ice-bag over the heart (15 min. at a time), long cold baths, short hot baths (before sweating), cold abdominal compress (5 min.), cold sitz baths, etc.—William S. Sadler, in *The Chicago Medical Recorder*, Jan. 15., 1911.

HYDROTHERAPY.

• **Hot Irrigations in Acute Gonorrhea.**—Wayman advocates hot irrigations in acute gonorrhea. He adduces the following points in favor of the method:

1. The germs cannot flourish in a hot temperature.
2. Hot fluid causes a relaxation of the tissues which opens the crypts of the mucosa.
3. It causes a temporary hyperemia which assists nature in the inflammatory reaction.
4. It is an efficient reliever of pain.

The author uses an electric heater which gradually raises the temperature of the fluid as the irrigation progresses. The doctor recommends potassium permanganate 1:2000 at a final temperature of 120° F.—*Indianapolis Medical Journal*, Dec., 1910.

Comments on Scholz's Paper, "CO₂ Baths and O Baths."—Schneuten takes exception to Scholz's statement that a definite scheme of hydrotherapy cannot be laid down for functional neuroses. On the basis of quite a large series of observations Schneuten has reported that the O baths have a favorable effect, in the first place, on nervous affections, chiefly functional neuroses, and especially in neurasthenia and hysteria. Later experiments have confirmed these findings.

Of course a directly curative action cannot be expected from the bath, but certainly it has symptomatic effects to a marked degree. Senator says that the O baths are less exciting than the CO₂ baths, reduce blood pressure and pulse frequency, and on the whole deserve

preference in conditions of nervous excitement, nervous palpitation, tachycardia, insomnia, and in general wherever it is important to reduce blood pressure, particularly in arteriosclerosis.

Schneutgen therefore advises in functional neuroses the use of the O bath only.

He is, however, in accord with Scholz's view that it is not advisable to follow always the dictum of Buttersack that "the CO₂ baths are to be preferred to the O baths," as the carbonated bath acts often very well on pulse irregularity and subnormal blood pressure, especially in cardiac weakness.—*Deutsche Militaerärztl. Zeitschr.*, 1910, No. 4.

The O Bath in Acute Infectious Diseases.—Arthur Wolff, writing from Virchow's Krankenhaus, tells of using the Oxygen bath in scarlatina, and diphtheria, and records the effect on rectal temperature, leucocyte count, pulse rate and quality, and blood pressure.

The Oxygen bath favorably influences mild cardiac disorders, heart and vascular weakness. In convalescence from acute infectious diseases, it is to be regarded as a procedure which sustains the heart and tones the entire organism. The body heat is slightly raised by an Oxygen bath of indifferent temperature, especially in comparison with the CO₂ bath, and in some cases there also occurs diuresis and leucocytic increase. In acute exanthematic infectious diseases the O baths hasten desquamation more rapidly and permanently than the older methods.—*Berliner Klin. Wochenschrift*, March 21, 1910.

The Oxygen Bath's Uses and Indications.—In all essentials the investigations in Mueller's clinic at Teubingen and Laqueur's service at the Virchow Hospital agree with Scholz's previous experimental work (*Zeitsch. f. exp. Path.*, 1909) as to the effects of oxygen baths on the circulation, when given at indifferent temperature (95° F.) and when all sources of error are excluded.

In healthy subjects a reduction of blood pressure occurs regularly but disappears before they leave the tub. The pulse behaves accordingly.

In organic heart affections with no great loss of compensation the blood pressure falls regularly and often remains lowered for one or two hours, provided the cardiovascular system still retains reactive powers and no antagonistic factors (chronic nephritis, aneurysm, severe arteriosclerosis) exist. Pulse rate lessens; feeble and irregular pulse becomes fuller and more rhythmical. In aortic aneurysm, where CO₂ baths and digitalis are contraindicated because they tend to raise blood pressure, the O bath relieves pains and dyspnoea. Occasionally it is useful in valvular disease, especially mitral insufficiency with beginning incomensation and some dyspnoea. In aortic insufficiency with wide fluctuations in the blood pressure it may inhibit a developing arteriosclerosis, regulating the pulse and heart function and relieving palpitation. It may do some good in aortic stenosis due to arteriosclerotic changes of the valve, removing the stasis in the minor circulation. In anginous conditions due to coronary sclerosis and cardiac asthma it really does lessen the symptoms. In arteriosclerosis with hypertension the blood pressure is regularly and often greatly diminished, and the pulse is improved in rate and quality. The best results are in beginning arteriosclerosis, as the O bath exerts a

mild gymnastic effect on the vessel walls which opposes the progress of the disease, and the heart-relieving properties of the bath are also welcome. Often lasting effects are secured. Biedert and Wolff recommend it for cardiac and vasomotor weakness following infectious diseases. In acute and febrile affections it is not indicated.

In heart disease with severe loss of compensation, the O bath does not reduce and may even transiently elevate blood pressure. The pulse generally moderates for a time. In mitral stenosis, which is usually insufficiently compensated, it can at the most only decrease the pressure in the pulmonary circulation. Affections of the cardiac muscle—chronic myocarditis, fatty heart, etc.—are the field of the CO₂ bath.

In nephritis the O bath lowers the blood pressure and makes the tense pulse softer and slower, if the cases are not too far advanced. In a protracted acute case with hematuria Scholz obtained with it a reduction in the amount of blood excretion; when the baths were omitted, renal bleeding at once increased. The hematuria disappeared after eighteen baths.

For cardiac neuroses, including Grave's disease, and all functional neuroses in general, there is no fixed rule regarding the O bath's effect on blood pressure and pulse rate, which may rise, fall or remain stationary. The improvement in tachycardia after a few baths, both objective and subjective, is striking. Munk (Ziehen's clinic) made a study of O baths in nervous disorders, which his patients preferred to CO₂ on account of the easier respiration and the absence of headache and vertigo. He recommends the O baths in all diseases with motor excitability, in hypotonia, in relaxed forms of paralysis and above all in Graves' disease. It relieves neuralgia and neuritis.

Symptomatic benefit may be seen in other diseases, as anemia and chlorosis and the manifold climacteric molimina.

The relative position of the O bath toward the CO₂ bath may be deduced from what has been said. The former rests the heart, the latter exercises it; the one reduces blood pressure and stimulates peripheral circulation, the other raises blood pressure and strengthens central activity. Nevertheless the indications of the two baths are not always diametrically opposed. The O bath will often be used to prepare a patient for a course of CO₂ baths, since the latter make a demand upon the heart.—*Deutsche Med. Wochenschrift*, No. 48, 1910.

Useful Hints for the Local Application of Water.—A very cold compress, as a thick folded towel, or a mass of cheese cloth, applied to the head and face, will relieve headache when the head is hot. The hair should be wet, and if the case is obstinate, apply an ice collar around the neck. Change the compresses as soon as they begin to become warm.

A cold compress applied to the abdomen in typhoid fever during the entire course of the disease will prevent ulceration and hemorrhage in nearly every case. The compress should cover the whole abdomen, should be wet in water at 60° F., and must be changed every twenty to forty minutes, according to the degree of fever, or as often as it becomes well warmed.

For weak or failing heart, apply a cold compress over the heart (60° F.) for fifteen to twenty minutes, and repeat every hour.

For inflammation of the lungs, apply a cold compress (60° F.) over the whole front part of the chest and the affected side, and change every fifteen to twenty minutes, or when well warmed. Apply a fomentation for ten minutes once in two or three hours, or more often if pleurisy pain is present. Keep the legs and general surface warm.

An acute coryza, or cold in the head, with sneezing, and running at the nose, may often be cured in a night by wetting the hair, and putting on an oil-muslin or mackintosh bathing cap to be worn overnight.

For a severe pain due to inflammation in the hand or finger, immerse the elbow in cold water.

For a lung cough, apply the chest pack. There is no other remedy so effective, and at the same time harmless, as the chest pack. The compress should warm up at once and keep warm.

For a sleepless man, who has too much blood in his head, there is nothing better than a bath at 92° F. for thirty minutes at bedtime, and a wet girdle to be worn during the night. The girdle is a towel long enough to reach once and a half around the body, wrung dry out of cold water, and covered so it will warm up quickly, with a thick woolen bandage.

For a "crick in the back," a large fomentation applied at bedtime and followed by a towel wrung out of cold water and covered warm with flannel to remain overnight, is worth a hundred porous plasters and all the liniments of the pharmacy.

For pain in the eyeball, apply a light fomentation over the eye and forehead, just above the eye, not the cheek.

For colic pain, give a hot enema, apply a fomentation, and afterward a wet girdle for an hour. Repeat this procedure if necessary.

Pain in the pelvis is almost always relieved by a very hot foot bath, which relieves the congestion by diverting the blood into the legs. A hot hip and leg pack is still more effective.—Kellogg, in *The Medical Missionary*, Dec. 1910.

ELECTROTHERAPY.

High-Frequency Currents in Chronic Appendicitis.—William Harvey King states that by proper technique in the use of high-frequency current all the symptoms of appendicitis of the chronic variety may be removed in many cases. No serious aggravation of the disease will result when a cure is not obtained. Septic cases are unsuitable for this method of treatment. High-frequency currents furnish some very accurate diagnostic indications. Simple catarrhal appendicitis is thoroughly suitable for this treatment, while malformations and misplacements are unsuitable. The author describes accurately the methods of application of the currents and the kind of apparatus to be used. He has treated forty-two cases in all by this method, with four failures; six others had not a fair trial; twenty-six were cured, and six partially cured. Histories of several cases are given.—*Medical Record*, Jan. 14, 1911.

Electricity in Chronic Disorders of the Stomach.—Levy and Wells, of New York, advocate the use of electricity in the treatment of most chronic diseases of the stomach, which have not responded to

the regular medicinal methods of treatment and diet. The large percentage of cures and improved cases, show the value of this agent. Electricity stimulates the flow of gastric juice; it stimulates the healthy glands, and increases the motor power of the stomach. The analgesic effects of galvanism are seen at once in cases of gastralgia. The authors review the different methods used in the application of electricity. The most generally useful is the intragastric, in which by means of electrodes swallowed the current is applied to the interior of the organ; the use of water in the stomach during the application makes the current reach the stomach more generally than when it is empty. The polyphase or triphase method also gives good results. In disturbances of secretion galvanism is most useful; in disturbed motor conditions faradism is to be preferred. Illustrative cases are given.—*Medical Record*, Feb. 4, 1911.

Electrical Treatment of Obesity.—A. Laquerriere details Bergonie's electrical method of treating obesity by exercise of the various muscles, the surface of the body being covered with large electrodes, so that all the large muscular masses are affected. The operator then applies a tetanizing faradic current through the electrodes, in such a manner that there is a rhythmical action, the excitation lasting half a second and the interval of repose a half second. The current should be strong enough to cause marked muscular contractions. During this treatment the body becomes covered with sweat, but the patient feels no disagreeable sensations, only the contraction of the muscles. The heart and respiration are increased in frequency, in response to the need of increased oxygenation in the contracting muscles. There is no appreciable fatigue when the sittings are properly managed; the appetite is increased and sleep is improved; blood pressure is lowered as it is after simple exercise. One gets general active gymnastics, but involuntary ones, and without the interference of the psychic centers. It is difficult to find any other system of gymnastics that approaches this in the general action of all the muscles. This form of exercise may be used even for persons who are persuaded that exercise is bad for them. Since the movement is involuntary the nervous system does not become fatigued. In the fearful and the neuropath one may get the benefits of exercise without their having any of the inconveniences of it. Bergonie has obtained brilliant results by this method in the obese, but the method may be employed also in all the nutritional troubles. This method is both preventive and curative, since it increases the musculature of the patient, and he will not again fall into the hygienic faults that have caused his obesity.—*Journal de Medicine de Paris*.

VACCINE THERAPY.

Vaccine Therapy in Acute Infections.—E. Martin reaches the following conclusions: 1. The opsonic index, as a guide to treatment, is not an essential element if the clinical symptoms be carefully observed and the dose regulated accordingly. 2. Acute infections, such as acne, furuncles, and subcutaneous abscesses, show brilliant and uniform results. 3. The best results are obtained when the dose is slowly increased through successive inoculations. 4. Autogenous

vaccines are not essential in the treatment of staphylococcus processes. 5. The duration of infections is perceptibly shortened by the use of vaccines.—*New York Medical Journal*, Dec. 10, 1910.

Ulcerative Endocarditis in a Baby Cured by Autogenous Vaccine.—Dr. E. S. Molyneux reports a case of a child aged four months who was admitted with an abscess over the left tibia. An incision was made and drainage established. Presently cyanosis, cardiac dilatation and a mitral murmur pointed to ulcerative endocarditis. Immediately thereafter the right sacro-iliac joint and the right knee showed pyemic infection. Both joints were opened. Examination of the removed fluid revealed the presence of the staphylococcus albus in each case. An autogenous vaccine was made and $2\frac{1}{2}$ million cocci were injected weekly. Three months later the baby was quite cured, knee-joint and heart being apparently normal.—*British Medical Journal*, Dec. 3, 1910.

Antityphoid Inoculation.—Two splendid articles—"The Prevention of Typhoid Fever with Antityphoid Vaccine," by F. F. Russell, and "Antityphoid Inoculation As Introduced Into Certain Training Schools for Nurses in Massachusetts," by M. W. Richardson and L. H. Spooner—show very clearly how medical opinion is rapidly becoming favorable to the use of Typhoid Vaccines. Russell observes that typhoid has invariably appeared in armies in the past and may be expected in the future. The usual prophylactic measures are only partially available in camps. Vaccination is simple and harmless and wherever used has reduced the incidence and mortality of typhoid. The immunization of every individual in the army is perfectly feasible, and it offers the greatest hope of freedom from this plague in the future. Antityphoid vaccination has long since passed the experimental stage. Since 1904, 60,000 men have been vaccinated in India, over 7,000 in South West Africa, and over 14,000 in the United States, and in no case has any harm followed its administration. The time has come when its use should be extended, not merely in the military services, but also among the civil population. Richardson and Spooner report 1,588 inoculations practiced upon 405 individuals. As yet there have been no untoward results, and they believe that the inoculated individuals have acquired an increased resistance to typhoid infection which will last them for several years at least. They expect in the coming year to extend the influence of these inoculations, especially among nurses and others attendant upon the sick. Furthermore, they have strong faith that the procedure will, within a short time, find increasing favor with the general public, which, exposed as it is to many sources of infection, is in great need of specific protection.—*Boston Medical and Surgical Journal*, Jan. 5, 1911.

A Resume of Vaccine Therapy.—Stoner has collected 2,332 cases treated by vaccine therapy. Of these, 2,000, or eighty-six per cent, were cured or improved; 251, or ten per cent, were not benefited; and the remaining seventy-nine cases discontinued treatment, or were lost. Three hundred and six of the cases were general infections, and of these, 274, or eighty-eight per cent, were cured or improved, and twenty-eight, or about nine per cent, not benefited. The series includes sixty-seven different conditions. These figures point out the tremendous, almost unlimited, field that vaccine therapy may cover.

In no instance was serious harm caused by the use of vaccines. Of uniformity of doses Stoner states that it is realized that in order to arrive at just what is the proper dose of dead bacteria to employ in a given condition, it is necessary to study the effect of various sized doses. It is also true that the number of bacteria inoculated at one time depends upon the nature of the disease, whether it is acute or chronic, on the interval between doses, and on the condition of the individual. However, in reviewing the literature, it is often found that one observer treats furunculosis with 10,000,000 dead staphylococci at a dose, while another gives doses of 1,000,000,000; or one author gives 5,000,000 dead gonococci and another 500,000,000 in an identical condition. The question arises, whether the too large doses may not do harm or the too small ones be of no benefit; at least, it would seem that under the same circumstances, better results might have been obtained had more uniform doses been employed. Stoner is preparing an analysis of the various doses employed by different observers, and the results achieved, in the hopes of arriving at something near a standard dose of the various organisms. About the same applies to the intervals between doses as has been described for the size of the doses, both as regards the disease and the condition of the patient. Some authors advise daily injections, while others allow intervals of two weeks, or even a month, between inoculations. Here, too, better results might have been obtained if more uniformity had been followed. Of course, in much of the work done the opsonic index has been used as a guide, but this is subject to such wide variations, that it has only served to complicate matters, and it is now generally believed that the opsonic index is of little value except in the hands of experts.—*American Journal of the Medical Sciences*, Feb., 1911.

MISCELLANEOUS.

Biers' Method in Acute Gonorrheal Arthritis.—When properly applied and controlled, Strine finds that Bier's treatment of joints acutely involved by gonorrheal infection produces definite beneficial results. Relief of symptoms is striking, the disease is cut short, and permanent damage to the joint is prevented. The hyperemia produced must be intense. Of course, the pulse must not be obliterated. Usually the fault lies in not sufficiently obstructing the return circulation. If the edema at any time becomes too pronounced, or signs of blocked circulation appear, remove the bandage, elevate the limb for one hour, then replace the bandage. Instruct the patient to test frequently the temperature of his hand or foot, as the case may be, and keep him under observation.—*U. S. Naval Medical Bulletin*, January, 1911.

A Very Restricted Diet (Rice) in Acute Inflammatory Disease of the Skin.—L. Duncan Bulkley, New York, has found of great use in cases treated by him, as well as in a skin affection experienced by himself, a restricted diet consisting of boiled rice, with bread and butter, to be carried out for about five days at a time. The acute inflammatory diseases of the skin are marvelously well affected in a few days by the use of this diet. It is productive of relief especially to the itching and burning of these affections. Diet has a very great effect

on skin diseases. An improper diet renders the tissues of the skin more susceptible to the action of micro-organisms. Proper liver action and phagocytosis account for the increased resistance of the skin. A deranged action of the chylopoetic organs is another factor in the production of skin diseases, producing deranged circulation. Illustrative cases of the use of the rice diet are given. Imperfect or deranged urinary secretion has much to do with the causation of skin diseases. Proper kidney action is assisted by the exclusion from the food of the nitrogenous elements of the diet. The patient feels better, lighter and freer while taking the rice diet. The five days of non-nitrogenous diet causes an increased output of nitrogen, which is lessened when a return is made to the ordinary diet.—*Medical Record*, January 28, 1911.

The Future of Psychotherapy.—Theophil Klingmann, Ann Arbor, Mich., says that the theories of Freud and Jung have revolutionized the methods of diagnosis and treatment of psychoneuroses, and have placed psychotherapy on a sound basis, and a wide field has been opened. Beginning with suggestion and hypnosis, relief was given to the sufferings of many patients, but the trouble always returned later. It is now entirely unnecessary to resort to hypnosis. The suppression of the causative factor by the mind has been shown, and the method of treatment by finding and removing this factor has given a treatment based on sound psychology. The use of the dream has been of great value. It is not a senseless jumble, but a perfect mechanism, the fulfilment of a wish. No psychoanalysis is perfect without the analysis of dreams, which help one to interpret symptoms and are a valuable aid in diagnosis and treatment. The effort to forget the unpleasant represses the thought, which remains in a dormant state. Dreams have a definite psychological mechanism; each is the expression of a mental occurrence, a causal phenomenon. From such a causal phenomena may be produced neuralgias, contractures, paralyzes, and other neuroses. When one seeks out and removes the cause one may cure the symptom.—*Medical Record*, January 14, 1911.

The Therapeutics of Light.—Herbert McIntosh concludes:

- (1) That light penetrates the tissues.
- (2) That in so doing the chemical rays produce fluorescence of the blood and serum which is reduced or absent in pathological states, as, for example, in malaria.
- (3) That the action of light upon the blood stream reduces oxyhemoglobin and thus stimulates the chemistry of the tissues, that is to say, improves metabolism.
- (4) That the most useful portion of the spectrum is not the heat or luminous portion, but the chemical portion.
- (5) That the physiological effects of light flow easily from the marked penetration of the light rays, particularly the chemical portion of the spectrum.
- (6) That the blue light has a peculiar field in the control which it has over pain and hyperemia.
- (7) That red light by its exclusion of the chemical rays plays an important role in the treatment of smallpox.

He closes an excellent paper as follows: "Finally, I have given some illustrations of the efficient action of light, of artificial sunlight, and concluded with a brief description of the apparatus employed in

light therapy. My aim has been principally to show that the use of light for therapeutic purposes is rational and that it is a most important addition to the physician's equipment for the management of diseases."—*Boston Medical and Surgical Journal*.

The Local Application of Dry Hot Air.—The general practitioner will never be able to apply personally the major elements of physiologic therapy to any great extent because of the elaborateness of the plant required, but some of the minor elements can be perfectly utilized by the general practitioner, and most gratifying therapeutic results obtained. The local application of dry hot air is one of the most useful of them.

There are on the market several forms of apparatus for its application, of which will do good work. In order to be efficient an apparatus must be capable of producing 400 degrees Fahrenheit in fifteen minutes at the outside, and of maintaining this temperature indefinitely. In order to be useful to the general practitioner these machines must also be easily portable. They may be heated by gas, gasoline, alcohol, or electricity, but one that is to be used in general practice should be supplied with a gasoline attachment, whatever other heating agent is usually employed, as the gas-pressure in some houses is not sufficient to produce an adequate degree of heat, electricity is available in only a few houses, and alcohol is not generally satisfactory for several reasons.

Preparation of the patient for the application is simple, consisting merely in covering part of the body to be treated with three thicknesses of loose-meshed Turkish toweling, so as to secure intimate contact between wrapping and skin. If the perspiration which is induced as soon as the heat strikes the skin, is allowed to remain on the skin during a treatment, it will soon boil under the influence of the intense heat and blister the patient. These wrappings absorb it as soon as it is formed, the heat immediately vaporizes it and it rapidly diffuses itself out of the wrapping.

Directions for the general operation of the machines are furnished by the manufacturers. Complete treatises on thermaerotherapy can be obtained by those who take more than a passing interest in it.

The physiologic effect of the dry hot-air application is produced in two ways: first, by thermic irritation of the numerous nerve-endings in the skin, and second, by the actual raising of the temperature of those portions of the body in immediate contact with the heat.

Irritation of the nerve-endings of the skin results, by reflex action, in (1) marked dilatation of the capillary areas, hence greatly increased blood-supply; (2) enormously increased functionation of the sweat-glands, hence increased local elimination, and (3) acceleration of the cell nutrition and function through reflex stimulation of the spinal centers. The raising of the temperature, *en masse*, results in acceleration of the chemical reactions constituting the cell metabolism of the part. It will be observed that the combination of these influences result in increased physiologic resistance of the tissues affected and acceleration of the process of repair of damaged tissue elements.

The sphere of action of this application, then, is in the treatment of pathologic conditions which are strictly local in character, and which can be happily influenced by increasing the local physiologic cell

resistance and the local nutritional, absorptive, and eliminative functions. Such conditions obtain in many diseases encountered by the general practitioner, but it will suffice to mention three which illustrate the different types of cases in which the local dry hot-air application is most useful. These three are (1) sprains, (2) most cases of true rheumatism in which but one or two joints are involved, and (3) local septic infection of the extremities before the process has involved the lymphatics connecting the affected part with the trunk, and in which the general toxemia resulting from the local lesion is not profound enough to overwhelm the organism as a whole.—*Journal A. M. A.*, Dec. 31, 1910.

Means of Producing CO₂ Snow.—Owing to the fact that a suitable instrument to produce and mold solid carbon dioxide was missing during the first years of the applied carbon dioxide therapy, it was left to the originality of the operator to produce it as best he could.

These methods were necessarily crude; however, they enabled the profession to obtain practical results.

In Gottheil's method a folded towel or a piece of chamois skin is applied to the vent in such a way as to be in sufficiently close contact with the orifice. He sometimes uses a cylindrical staff or short piece of broomstick to get a proper cavity in the towel, removing it after the first windings of the retaining bandage have been put on. With ordinary rollers this hollow towel or bandage is firmly bandaged to the vent and heavily re-enforced. It is well to use plenty of bandage and to wind it tightly around the neck of the vent and top of the cylinder, for on this depends the amount of pressure that can be used without rupture or escape of gas and the hardening of the ice. With the key the gas is then turned on at the tap, slowly at first so as to permit the ice to freeze in the meshes of the container. Clouds of white vapor or fine snow escape; the cloth may rupture and the cylinder top is covered with hoar frost. The gas is then turned on again forcibly a number of times until a sufficiently large and firm mass of ice has formed. When this is obtained the cloth is icy cold and perfectly hard; the gas is then shut off and the bandage cut away. The ice cylinder and the cloths are frozen together, and the bandages are brittle and must be carefully disentangled to avoid tearing.

Pusey's method is to collect the snow in a cloth, or preferably a chamois skin, and subsequently to compress it into a solid mass with the hands protected by a cloth, and to pare into any desired shape with a knife, or press it into a tubular mold.

These crude methods have since become obsolete through the introduction of an instrument which produces a crayon of suitable shape and solidity in the easiest and most elegant manner.—*Medical Brief*, Jan., 1911.

Nothing is difficult; it is only we who are indolent.—B. R. Haydon.

REPRINTED ARTICLES

LOW PROTEIN DIET.

BY WINFIELD S. HALL, PH. D., M. D., CHICAGO, ILL.

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Organic foods from plant and animal sources may be subdivided into two great groups, the carbonaceous and the nitrogenous. Carbonaceous foods may be further subdivided into two classes, carbohydrates and fats, while the nitrogenous foods are represented by the single class, proteins. This classification of foods is not only the most scientific but also the most practical because, while it adheres closely to the chemical composition of foods, it at the same time is strictly coincident with the uses of these foods in the body. Carbonaceous foods (starches, sugars and fats) are the fuel foods, while the nitrogenous (lean meats and eggs) are constructive foods.

Liebig, the father of physiological chemistry, believed and taught that muscle tissue is disintegrated incident to muscle work, therefore the waste of muscle tissue must be proportional to work accomplished. Making this the basis of his theory of muscle work he believed that the greater the work required of the muscular system, the greater the amount of lean meats and eggs required as food. Following the ingestion of large quantities of lean meats and eggs there is a proportionately large quantity of nitrogenous excreta. If one were to arrange his diet on the basis of Liebig's assumption, giving protein foods in proportion to the amount of work required of the muscular system, he would find that nitrogenous excreta appear in proportion to muscular work performed. It is thus very easy to see how Liebig and his school could fall into the fallacy of accepting as a law of nutrition that "nitrogenous excretion (urea, uric acid, etc.) is proportional to muscular work."

The fallacy in Liebig's theory did not appear until Fick and Wislicenus put it to a test in their historic experiment, in which they performed a prodigious amount of work (the ascent of one of the Alps) during a fast period. During this fast period while they were climbing the Faulhorn they collected all renal excretion and subjected it to careful quantitative tests for nitrogen. As a result of these tests they found that muscular work was accompanied by no appreciable increase in nitrogenous excretion, above the rest period which immediately preceded the muscular work, nor was it appreciably different from that of the rest period which immediately followed the work. The only interpretation possible for this experiment was that nitrogenous excretion is practically independent of muscular work. This result absolutely contradictory to the teachings of Liebig's school was naturally put to the test in several of the university laboratories before it was accepted, but these tests uniformly confirmed the results of Fick and Wislicenus.

The first important work directed toward the establishment of a dietetic standard was that done by Voit and Pettenkoffer in their laboratory in the University of Munich. The epoch-making activities of this laboratory extended through at least two decades, being at the maxi-

mum between 1880 and 1890. This period was especially devoted to problems of nutrition and metabolism. Voit introduced two new ideas, namely, the idea of *nitrogenous equilibrium*, and the idea of "*luxus consumption*" The first of these expressions sets forth the fact now well established and universally recognized, that in the animal body in a perfect state of nutrition the nitrogenous excretion perfectly balances the nitrogenous ingestion, thus establishing a state of nitrogenous equilibrium.

The second expression refers to the fact that ingested proteins over and above the amount necessary to make good tissue waste are promptly oxidized and the nitrogenous element excreted in the form of urea, uric acid, etc. It goes without saying that the nitrogenous equilibrium may be maintained within a wide range of variation of nitrogenous ingestion. The lowest limit of nitrogenous equilibrium is reached when the ingestion just balances the waste of nitrogenous tissue, while the highest limit is reached at the point of highest nitrogenous excretion, or when the liver would be unable to elaborate more, and the kidneys unable to excrete more urea and uric acid. This lowest limit represents between fifty and sixty grams, or a little less than two ounces of dry protein, while the upper limit has never been established but is probably five or six times as great, or ten or twelve ounces of dry proteins.

One of Voit's contributions to this subject was a definite though arbitrary fixing of the distribution of the diet between proteins, fats and carbohydrates. He used the following amounts respectively for a man at moderate work:

Proteins	118 grams
Fats	56 grams
Carbohydrates	500 grams

This menu representing a total caloric value of about three thousand, while to a man at hard work he assigned

Proteins	145 grams
Fats	100 grams
Carbohydrates	450 grams

Or a total of about thirty-three hundred calories. About a decade later Atwater, as a result of extended experiments, modified this apportionment as follows:

A man at moderate work:

Proteins	125 grams
Fats	125 grams
Carbohydrates	450 grams

This menu representing a total of three thousand five hundred calories, while a man at hard work was assigned

Proteins	150 grams
Fats	150 grams
Carbohydrates	500 grams

representing a total caloric value of about four thousand. During the last decade a good deal of experimental work has been directed toward the establishment of a more accurate basis, scientific men generally feeling that this assignment above mentioned was largely guesswork.

Voit's early experiment, reported in the year 1889, of a vegetarian weighing about 125 pounds showed that he was able to maintain the

body in a condition of nitrogenous equilibrium for a considerable period on a diet containing 52½ grams of protein plus the usual amount of carbohydrates and fats. Breisacher reported in 1891 an experiment on himself in which he maintained nitrogenous equilibrium for a period of thirty days on 67 grams of protein daily, his menu representing a total value of 2866 calories.

Notwithstanding these and other experiments, all of which showed conclusively that the body may be maintained in nitrogenous equilibrium on about half the amount usually given, still about a whole decade elapsed before there was much tendency to depart from the arbitrarily assumed protein requirement of one hundred to one hundred eighty grams of proteins for men in different kinds of employment and under different climatic conditions. The most recent, epoch-making series of experiments in this field have been made by Professor Chittenden of Sheffield Scientific School, Yale University. Professor Chittenden's experiments were made in the early years of the twentieth century and published in 1904 in an extended monograph entitled "Physiological Economy in Nutrition." In this monograph Professor Chittenden sets forth in detail extended experiments upon three groups of men: first, professional men represented by five members of the university faculty; second, a squad of soldiers from the hospital corps of the United States Army; third, athletes—a group of men chosen from among the university students. As a general result of these experiments which were performed with such scrupulous care and scientific accuracy as to win the ready acceptance of the whole scientific world, Professor Chittenden has positively demonstrated that the body may be maintained not only at nitrogenous equilibrium but in perfect physical condition and distinctly improved physical efficiency on a diet containing somewhat less than half of the protein content provided in the dietary of Voit and of Atwater. Let us quote from Professor Chittenden's own summary at the end of his volume:

"Confining our conclusions to general statements, it may be said that our results, obtained with a great diversity of subjects, justify the conviction that the minimum protein requirements of a healthy man under ordinary conditions of life is far below the general accepted dietary standards, and far below the amounts called for by the acquired taste of the generality of mankind. Expressed in different language, the amount of protein or albuminous food needed daily for the actual physiological wants of the body is not more than one-half that ordinarily consumed by the average man. Body weight (when once adjusted to the new level) health, strength, mental and physical vigor, and endurance, can be maintained with at least one-half the protein food ordinarily consumed; a kind of physiological economy, which, however, if once entered upon intelligently, entails no hardships, but brings with it an actual betterment of the physical condition of the body. It holds out the promise of greater physical strength, increased endurance, greater freedom from fatigue, and a condition of well being that is full of suggestion for the betterment of health.

"Physiological economy in nutrition means temperance, but not prohibition. It means full freedom of choice in the selection of foods. It is not cereal diet nor vegetarianism, but it is the judicious applica-

tion of scientific truth to the art of living, in which man is called upon to apply to himself that same care and judgment in the perfection of his bodily machinery that he applies to the mechanical products of his skill and creative power.

"Food requirement must of necessity vary with changing conditions, but with due recognition of this fundamental principle, all the results so far obtained in this investigation, with a great variety of persons point to the conclusion that the real demands of the body for a protein food do not exceed fifty per cent of the amount generally consumed. One-half of the hundred eighteen grams of protein food called for daily by the ordinary dietary standards is quite sufficient to meet all the real physiological needs of the body, certainly under ordinary conditions of life; and with most individuals, especially persons not leading an active out-of-door life, even smaller amounts will suffice. Excess means waste, but of far greater importance is the unnecessary strain placed upon the body by this uncalled for excess of food material, which must be gotten rid of at the expense of energy which might better be conserved for more useful purposes.

"Further, the total consumption of food by the average individual, non-nitrogenous as well as nitrogenous, is considerably greater than the real needs of the body demand, although here we must give closer heed to the varying requirements of the body incidental to the varying degrees of activity. The man whose work is mainly mental has no real need for high fuel values in his daily rations. For such a man, a high potential energy in the daily intake of food is an incubus and not a gain. Body equilibrium can be maintained on far less than three thousand calories per day by the brain worker, and in the interest of health, strength and vigor, as well as scientific truth, why teach the doctrine that a healthy man needs, on an average, foodstuffs to furnish three thousand calories or more per day, with sixteen to eighteen grams of nitrogen in the form of protein? Moreover, as our experiments have clearly indicated, even a man who is called upon to perform considerable physical work has no apparent need for a fuel value in his food of three thousand calories per day. No doubt, the man who works at hard labor or tramps for ten or twelve hours per day will require a larger intake of fats and carbohydrates sufficient to yield even more than three thousand calories; this is not true of a moderate worker, nor of the average man whose work is in large measure mental rather than physical."

The practical application of all this is not far to seek. We need not turn vegetarians but we should use very much less meat. One small portion of meat each day or perhaps three to five portions a week are quite enough. When eggs are used instead of lean meat one or two eggs should be the limit. Vegetable proteins are abundant in cereals, legumes and nuts. Milk is also rich in protein; about one-third of its 13 per cent of solids being protein. From these sources one can get an ample supply of protein without the use of any meats, but if one craves meat it is probably wisest to retain it in the dietary, the only precaution necessary being to use it very abstemiously.

Professor Chittenden in his summary hinted at the overwork of the excretory organs through excess of protein in the diet. The writer

would emphasize the importance of this point and urge the very great hygienic importance of reducing the proteins to a point considerably below the usual amount of this foodstuff. When proteins are taken in excess of the absolute needs of the body they are promptly oxidized and broken into a carbonaceous portion and a nitrogenous portion. The carbonaceous portion yields the same amount of energy per gram, as starch or sugar. The nitrogenous portion is promptly excreted by the kidneys. When one considers the fact that a pound of protein costs several times as much as a pound of sugar and yields no more energy the economical advantage of the sugar over the protein is made strikingly apparent.

The periods of life when the protein of the diet should not be reduced are the periods of rapid growth; namely, *infancy* and *puberty*.

Finally proteins may undergo putrefactive changes in the alimentary canal if they are taken in excess of the ability of the digestive organs rapidly to digest them. As a result of these putrefactive changes toxins are produced in the alimentary canal, and in part at least absorbed into the blood and distributed throughout the body where they do no small amount of injury. From consideration of all these facts it seems evident that the last word of the Science of Nutrition admonishes us to live abstemiously in general; choose a low protein diet represented largely by the proteins of eggs and milk, of cereals, legumes and nuts.—Reprinted in toto from *The Dietetic and Hygienic Gazette*.

2421 Dearborn Street.

LACTIC BACILLUS PLANTING.

BY A. K. BOND, M. D., BALTIMORE, MD.

The increasing use by the public of preparations of milk soured by the Bulgarian bacillus makes it necessary that physicians should have a clear view of its character and therapeutic claims; and as the literature of the subject is sparsely scattered among many journals in several languages, it is proper that a brief sketch of the innovation should be offered in the medical exchange of Maryland. I have not attempted to survey the whole of the said literature, except as far as was necessary to a fair understanding of the subject. There are many details concerning the agent and its therapeutics which have as yet not been worked out.

The Bulgarian bacillus (which has received various names from different workers) is one of the myriad varieties of germs which are capable of producing lactic acid fermentation in fresh milk. Several of these varieties are found in each dairy region; not as inhabitants of the udder milk, but as accidental infections from the environment of the milk pail. The varieties in neighboring regions may not be identical; so that when we take a view of the whole world, it is evident that the possible varieties are beyond estimation. In Oriental lands, where soured milk of camel, goat, ewe, mare, as well as cow, have been favorite foods and beverages since prehistoric times, a great number of brands of the article must have been hit upon and elaborated as specialties of different tribes and families. Some of these are still sold in Oriental markets under the names of lebban, kumyss and kefir.

Lebban, possibly lineal descendant of the "butter" which Abraham

set before his mysterious guests, is said by some modern travelers to be of most delicious tartness as eaten with a spoon from the "lordly dish" of the Arab host. Kumyss, originally made of the milk of mares by the Scythians of Herodotus and their Tartar descendants, is an effervescent beverage, slightly tart, and sometimes slightly exhilarating from a small percentage of alcohol. Kefir (a Turkish derivative indicating delight) is fermented by hard pea-sized yellowish "kefir grains," containing several varieties of yeast and bacteria. Made without scientific precautions, these preparations of milk are necessarily impure, being infected by the local flora, lactic acid and otherwise, of each locality.

In the markets of European Turkey there is sold a preparation of somewhat uncertain relation to those already described, known in Turkish speech as gelee, and in Bulgarian as joghurt—pronounced jaurd. It is tart like the others described, but not effervescent.

This preparation, whether from the reputation which certain Bulgarians fond of it have gained for longevity, or in the natural course of scientific inquisitiveness, has been of late years subjected to very searching study in many laboratories of Switzerland and Germany, and at the Pasteur Institute of Paris under Professor Metchnikoff. It has been found to contain a most vigorous lactic acid forming bacillus, now commonly known (in honor of its origin and of the pioneer work of the Bulgarian physician, Dr. Grigoroff, in bringing joghurt to the attention of scientists) as the Bulgarian bacillus. It is associated usually with a diplococcus and a harmless streptococcus (with which we have nothing to do at present). Whether the *Bacillus Bulgaricus* is found in all samples of gelee, or is a local infection of certain regions of Bulgaria, does not appear in the records.

This Bulgarian bacillus claims the attention of medical science by the possession of a faculty which is shared, apparently, by no other lactic acid former—that it can live for weeks in the human digestive canal, particularly the large bowel, and can thrive there on sugars and other foods so vigorously that it crowds out or kills out in selected patients certain putrefactive organisms that have been poisoning the body. It has been determined clinically that under ingestion of this bacillus both the feces and the urine show a lessening in the amount which they previously contained of harmful putrefactive products. The bacillus and its own products are, as far as known, entirely harmless. Its ingestion has no definite influence on stomach digestion.

The bacillus has been put on the market throughout the world under various trade names and in various preparations. Soon, probably, every enterprising milk firm will be selling these; in degrees of purity, doubtless that will demand State supervision, as contaminations may produce actual injury to unsuspicious buyers.

The bacillus is sold dry as a powder, or a tablet, to be swallowed or used in home manufacture. It is sold also in liquid milk preparations and in the form of bouillon. Some of these preparations contain the mixed germs of joghurt; some contain a pure culture of *Bacillus Bulgaricus*. It is, however, admitted by some most reliable makers that the presence of a certain companion germ gives a more palatable milk product. The main thing is that whatever germs are in it shall be identified and known to be harmless. The product of unknown germs is to be shunned, because under accidental conditions—as of long delay in the upper digestive tract—they may possibly poison the patient. A prepara-

tion that has a uniform taste at all times is to be preferred to one that varies decidedly from day to day.

The milk preparations have a peculiar acid taste, very agreeable to some adults and children (even infants), and agree excellently with many stomachs, even when very irritable. Inability to "take acids" does not contraindicate this special acid drink. Even among the Arab tribes, where it is the main reliance for food and drink, there are individuals who cannot take soured milk.

The acidity of Bulgarian milk increases with time, but it can be shipped to points several hours distant from the city. It is taken by the tumblorful morning and night, costing thus about fifteen cents a day. The tablets or chocolates cost two or three cents apiece. The bacillus should be taken for years in chronic cases, as there may be an underlying proneness to putrefactive infection; but the planting may be intermitted occasionally, as the bacillus continues to grow for several weeks without reinforcement in well-planted intestines.

The writer in January, while ill under the care of Dr. Hemmeter, obtained very positive benefit from a milk preparation of the bacillus. As to the comparative value of the dry forms observers differ. It seems to be agreed that the tablets will do the planting in favorable cases; but that the more abundant culture in milk is ordinarily preferable. The daily addition of a tablespoonful of honey to the diet favors the action of the bacillus; and stomachs well-planted bear well this and other forms of sugar, though previously they found sugars indigestible.

The indications for the planting are still obscure. It may be tried in all cases of subacute and chronic illness, constipative or diarrheal, which may possibly be based on some form of putrefaction of the bowel contents. To some patients it brings relief from flatulence and constipation, so that, with the addition of simpler precautions, such as massage, chronic purgative habits can be broken up. Sometimes it quiets bowel action. In an already full diet the Bulgarian milk should replace some other article of food.*

The future of this therapeutic agent may be already forecast. Many patients will medicate themselves with it in an aimless way and drop it as useless. Physicians will prescribe it for patients, who will take it in a desultory way, without proper supervision, gaining no permanent benefit. Elderly people will take it as a preventive of old age, and die in spite of their confidence in it. As a fad it will soon be dropped. Yet an agent of such possibilities for good will probably receive fair trial at the hands of a few careful physicians, and win here and there a triumph, even in patients who have despaired of health.

Like all dietary methods, it requires careful choice of cases, wise supervision by a doctor, and a determination on the part of the patient to get all the good it can offer.

The field opened for therapeutic effort is a wide one. The substitution of benign germs for injurious ones admits of great digressions along new lines of treatment for diseased surfaces, respiratory, cutaneous, etc. There is no *a priori* reason why subacute and chronic disease infections of these surfaces should not be starved out or more directly destroyed by vigorous benign implantations. This would be at least safer than efforts hitherto made to replace one form of disease infection, as in erysipelas implantations, by another somewhat less deadly.—Reprinted *in toto* from the *Maryland Medical Journal*, July, 1910.

HIGH FREQUENCY CURRENTS IN THE TREATMENT OF ARTERIOSCLEROSIS.

BY THOMAS E. SATTERTHWAITE, M. D., NEW YORK CITY.

The Author's attention was first called to the beneficial effects of high frequency currents in 1901. He then had under his care a physician who was recovering from a mild cerebral hæmorrhage. From the first he had continuously the infrequent pulse, 30 to 40. In addition to treatment by various heart tonics, he was given a quite extensive course of electricity by Dr. E. B. Perry, and there was no doubt in Dr. Satterthwaite's mind that this was attended by both temporary and permanent benefit. Static electricity was employed, with long sparks and the fine needle spray. In another case, of mild arteriosclerosis with aortic disease and cardiac hypertrophy, in a married lady of 65, the Nauheim treatment was given, followed by a course of iodine, and subsequently she was treated with the high frequency current by Dr. W. W. Johns, of Utica, N. Y. Previous to her coming under the author's care the maximum pressure had been 200. When the electrical treatment was begun, on February 17, 1909, it had fallen to 185. On March 27th it was 165; on April 10th, 150, and on April 17th, 145. There was also marked improvement in her general condition.

The method he now recommends is as follows: The patient is first subjected for a few minutes to the light bath, by means of which the blood is brought to the surface, and a sedative effect produced. Then the static breeze may be given: The sliding poles are pulled apart, so that there will be no spark, and the negative side of the machine is connected with the insulated platform by the long brass shepherd's crook, while the positive pole is grounded. The metal standard being placed near, with the crown over the patient's head, the negative electricity streams over his face, so that he feels the breeze. There is also an odor of ozone, which fills the room, the oxygen of the air having been changed to ozone, or, in other words, electrified. This treatment, which is continued for from five to ten minutes, is very soothing and helpful in asthenia. The patient is then subjected to the high frequency current. The plant for this consists of a resonator combined with a d'Arsonval solenoid and adjustable spark gap and a pair of condensers of the Leyden jar type. This apparatus is operated by a static machine of sixteen plates. The patient reclines on a "condenser couch," which is insulated by means of glass feet. Its cushion has on its under surface a fine metal plate, which extends its entire length and is connected with one pole of the Oudin resonator. The other pole of the resonator is connected with a vacuum electrode, and the fluorescent spark discharge is applied through the clothing of the patient by the operator's slowly moving the electrode over the surface. The séance lasts from ten to fifteen minutes.

It is generally held that the static machine is more sedative and more efficient in other respects than the coil. The powerful waves of the static form of electricity cause short waves of vibration in the capillaries, which do no injury and promote metabolism in a remarka-

ble manner. In Dr. Satterthwaite's experience, a diminution in arterial pressure is the regular sequel to the use of the high frequency current. The séances should not be prolonged beyond the time at which the pressure falls to normal, as this may prove harmful. Moutier has claimed, very properly, that while high frequency currents reduce arterial pressure, they cannot be said to be uniformly effective, as their action may be inhibited by errors of diet and other causes. Though as a rule he was able to secure a reduction in the pressure, in occasional instances this required as many as from sixteen to twenty sittings. The reduction once obtained, however, he claims, can be maintained for as much as three years without relapses. It has sometimes been advised to use the faradic current as an adjuvant. Intestinal atony is often a complication of arteriosclerosis, and here the faradic current, applied over the abdominal walls, may be helpful in relieving the constipation. In addition, Dr. Satterthwaite uses mercury, iodine, iron and arsenic, according to the indications present.—Author's abstract of a paper read at the American Therapeutic Association, Washington, D. C., May 5-7, 1910. Reprinted from the *Monthly Cyclopedia and Medical Bulletin*, July, 1910.

BOOK REVIEWS

SERUM AND VACCINE THERAPY. By R. Tanner Hewlett, M. D., F. R. C. P., D. P. H., Professor of General Pathology and Bacteriology, King's College, London. Second Edition 1910. London: J. & A. Churchill. Price, 7s. 6d. net.

This is really a manual of bacterial therapeutics. The advances made in this department by medical science since the first edition was published have rendered many changes and additions necessary. Our knowledge of vaccines has recently advanced by leaps and bounds, and in the volume before us Dr. Hewlett has included all the most recent information on the subject. He has also added a chapter on sour milk treatment, which is at present much in vogue. In addition to other topics considered in this book are the preparation of and the treatment of disease with antitoxins and antisera, vaccines and other substances. Short directions are given for making and testing these. An account is also given of transfusion.

The book as a whole gives an excellent account of its subject. It contains all the information necessary for the physician who wishes to employ serums or vaccines in his practice. As a text-book it would be hard to beat, while as a handbook of real practical value it has no equal in the English language. Dr. Hewlett is an authority on the subjects of which he writes, and his book may be taken as a complete and accurate guide on the subject of serum and vaccine therapy.

NOTE.—The foregoing review is taken from *The Prescriber*. It seems hardly possible to say anything more or better. We warmly recommend this book.

THE LETTERS OF DOCTOR BETTERMAN. By Charles A. Blanchard, M. D. Reprinted with Revisions and Additions from *The Office Practitioner*. Philadelphia, Pa.: J. D. Albright, M. D., 3228 Broad Street (Tioga). Art cover; 140 pages. 75 cents net.

This is a bright, interesting, captivating and helpful little book. It is the kind of book that makes you feel good when you are reading it and when you're done. The author philosophises about many of the phases of medical life and has succeeded in cramming into this book a lot of encouragement, stimulation and good common sense.

The old Doctor writes his impressions to his son and does not hesitate to handle without gloves matters which are "live issues" to every practitioner of medicine. For this very reason this book ought to be in the hands of every one of our readers. It will help you to fight and to practice better and more sympathetic medicine.

PRACTICAL POINTERS FOR PROGRESSIVE PHYSICIANS. By J. H. McCurry, M. D., Grubbs, Arkansas. 200 pages; cloth, with an index. Published by the Author. \$1.00 net.

Doctor McCurry is evidently a close reader of current medical literature and whenever the Doctor sees something that appeals to him as being especially attractive and practical, he clips it. Unlike most other doctors who are progressive to this degree, the author has gathered together these practical points and made them into book form so that all who have the dollar may take advantage of this scrap-book.

Really there is no limit to the variety of subjects discussed, and the collection is, therefore, of eminent practical value. The index makes it at once convenient and practical—a handy book for every "progressive physicians"!

THE PRESCRIBER. Volume IV for 1910. Edited by Thos. Stephenson, F. R. S. E., F. C. S., Examiner to the Pharmaceutical Society of Great Britain. 240 8vo pages; cloth; \$6 net. *The Prescriber*, 137 George street, Edinburgh, Scotland.

A regular dictionary of therapeutic progress. Not cumbersome nor technical, but as brief and pithy as one could wish. We have read each component issue of this journal with glowing admiration for Doctor Stephenson, and assure our readers that in this volume will be found a multitude of useful pointers.

The particular value of such a book lies in the new, up-to-date matter that one can thus get in convenient form. It is said that "it takes five years to get a therapeutic idea into a text book"—here you have progress delineated clearly and plainly up-to-the minute.

THE STRANGE CASE OF DR. BRUNO. By F. E. Daniel, M. D. Cloth; octavo, with 14 illustrations. Von Boeckmann-Jones Company, Austin, Texas. \$1.50.

The editor of the *Texas Medical Journal*, Dr. Daniel, has written one of the most fascinating books we have seen. The book is remarkable, not only as a love story in which the talented author describes most vividly the vibrations of the *chordae tendinae*, but he also delves deeply into the science of the phenomena of life—biology, cytology, physiological chemistry, electro-dynamics, psychology, amnesia (double personality) and suspended animation. Never was there written a more beautiful, wierd, scientific, tragic love story. It pulses with manly, chaste, soul-stirring events of intense human and scientific interest.—(From Literary Department of the *Pacific Medical Journal*.)

AMONG THE JOURNALS.

The first number of the new *Journal of the American Public Health Association* is dated January, 1911, and contains 76 pages of very interesting reading. This journal takes up the work formerly championed by the *American Journal of Public Hygiene*. It is edited by Dr. B. R. Rickards and published in Columbus, Ohio.

* * *

The *Maritime Medical News* of Halifax, N. S., has, like *Montreal Medical Journal*, suspended in order that the new Canadian organization journal may have as effective and as auspicious beginning as possible. The new journal will not be called the *Canadian Medical Journal*, as mentioned in our last issue (page 382), but will be known as *The Canadian Medical Association Journal*.

* * *

We understand that the management of *Surgery, Gynecology and Obstetrics* (103 State street, Chicago) has purchased the *Journal of Surgery, Gynecology and Obstetrics*, formerly published by the A. L. Chatterton Company of New York. The combined journals will be even better than hitherto—if that is possible. This is undoubtedly the best and most practical journal of surgery at the price—\$5 a year.

* * *

The first number of *The Eclectic Medical Forum* is before us. This new journal comes from Kansas City, Mo., and is published by the Eclectic Medical University of that city. From its appearance it bids fair to be a noticeable addition to the literature of our Eclectic brothers in this country. We wish it long life and many subscribers! (\$1; 1253 Grand avenue, Kansas City, Mo.)

* * *

The announcement made in our last issue (page 381) to the effect that *The Medical Era* was to be consolidated with *The General Practitioner* was correct enough; but the plans did not materialize, so we take back this announcement. The *Era* will continue under the same management and under the editorial care of Dr. R. B. H. Gradwohl of St. Louis. Dr. Lillie will continue his *General Practitioner*, and has plans for a bigger journal than ever. We wish him well.

* * *

Those of our readers who are interested in Osteopathy may be glad to see a copy of *The Journal of Osteopathy*. This is a live, newsy periodical, published at Kirksville, Mo., the home of Doctor Still, the founder of this science. We read this journal every month with much interest and, perhaps, some of our readers may be equally interested. A sample will undoubtedly be sent on request. (\$1 a year.)

QUERIES

Tungsten in X-Ray Tubes.

Do you know if it is possible to use the metal tungsten in the manufacture of anodes for X-Ray tubes?—J. N. Scott, Kansas City, Mo.

This question was submitted to Mr. Henry Green of the firm of Green & Bauer of Hartford, Conn. Mr. Green was, it is understood, the first man to make an X-Ray tube in the United States. His answer is as follows:

"Replying to your query of the 6th inst., will say that it would not be possible to use tungsten metal for an anode for X-ray tubes. In order to use tungsten for lamp filaments, it has to be reduced to an oxide. The tungsten metal itself is not susceptible of being formed into solid metallic shapes, although hard it continually gives off gases which are inimical to the tube.

"The same has been tried by us and found to be of no practical commercial value.—Very truly yours, Green & Bauer."

Hydrotherapy in Bronchial Asthma.

What does hydrotherapy offer for the relief of a paroxysm of bronchial asthma?—E. V. Woodruff, Biloxi, Miss.

Hydrotherapy is an effective agent in the treatment of bronchial asthma. It may be used for its immediate and its remote effects. A heating compress to the throat and chest would draw blood to the surface and thus relieve the congestion in the bronchi and bronchioles. The inhalation of steam would also be of value.

By remote effects we mean general effects on the system as a whole without special reference to the paroxysm. Tonic hydrotherapy—graduated sprays; hot and cold fomentations; the electric light bath followed by suitable measures—will do much to build up a resistance.

Possibly some readers may have some practical suggestions to offer on this interesting question.

Books on Hydrotherapy.

What is the best book on Hydrotherapy?—E. V. Woodruff, Biloxi, Miss.

There are now five books on Hydrotherapy in the English language. Since the publication of Prof. Simon Baruch's splendid work; large volumes by Kellogg of Battle Creek; Hinsdale of Hot Springs, Va.; Dieffenbach of New York, and Pope of Louisville, have been written. They are all good.

Incidentally any of these or any other books may be obtained direct from the publisher of **PHYSIOLOGIC THERAPEUTICS**.

A Journal on Light Energy.

Can you tell me of a journal which devotes its space principally to the subject of reduced or changed solar rays; water for internal use exposed to the sun's rays passed through different colored glass and the influence of such rays on the human body?—Dr. E. F. M. Wendelstadt, 26 Church street, Montclair, N. J.

We know of no such journals. Journals devoted to the physiologic measures of treatment as a whole have trouble enough in existing. No less than eight have been started and stopped in the United

States alone. There has been too little demand for journals of this kind, and *PHYSIOLOGIC THERAPEUTICS* is trying its best to supply that need. We hardly think that a journal devoted to solar therapeutics could live long.

This question is open to our readers. It is suggested that they communicate with Doctor Wendelstadt direct.

A "Qualimeter."

What is a qualimeter, and where can it be obtained?—Gustav Staats, M. D., 72 Madison street, Chicago.

The qualimeter is a new instrument devised for measuring the hardness of an X-ray tube. An exhaustive article regarding the value of this instrument appeared in the *Archives of the Roentgen Ray* (London) January, 1911. We do not know who supplies this instrument. Try The Kny-Scheerer Company, New York City. They have everything new.

CORRESPONDENCE

Violent Tic of Hysterical Form Removed in One Day by Psychotherapy.

TO THE EDITOR:

A striking instance of the success of rational procedure where empirical ones had failed was shown to the Washington Medical Society at two meetings in January. A young Hebrew man in North Carolina with ilioocolitis suddenly developed on going to bed one night an intense clonic contracture of the recti abdominis and diaphragm. This recurred every night, often keeping him awake for hours. It became less and less controllable, and soon occurred in sitting during the day. Then it began to come on standing, until his life was a burden.

The application of electricity with the fervid assurance of its efficacy made no impression, nor did "powerful and infallible" medicines.

The boy came to Washington, and was at once referred to the writer by his physician, Dr. Martin. On recognizing that the disorder was a tic of hysterical type, the psycho motor discipline devised by Brissaud was employed.

In this case, it consisted of inducing the patient to perform slow, even rythmical contractions of the recti while taking slow deep-breaths. In this way control was gained over the muscles, so that when the paroxysms were about to begin, he had now a means of mastery, and substituted the newly learned movement for the automatic one which formerly took its own bent. He learned in one day; too quickly as it proved; but after a slight relapse two days later another sitting cured him; and he was shown recovered at the next meeting of the society. Even for this very simple case, empiricism had failed where a little psychopathological knowledge reached the cause, and led to the very simple means used for its removal without either

psychoanalysis or reconstruction of the mentality. Such a symptomatic cure must of course be extended to a pathogenic one, i. e., the re-education of the patient's hysterizability. To indicate even the elements of this, another opportunity will be required.—Tom A. Williams, M. B., C. M., Washington, D. C.

High Frequency From Static or Generator, Etc.

TO THE EDITOR:

Under "Queries" on page 386 of the January number of your journal, the question is asked as to whether there is any difference between 800 milliamperes auto condensation, transformer operated by a Static Machine or Generator. Your answer to same is partially true. There are two points upon which a difference in physiological effect might vary. First in one instance the 800 milliamperes might have a parallel spark gap of $\frac{1}{2}$ inch, which would indicate a certain voltage. In the other case it might have a parallel spark or $\frac{1}{8}$ inch, which would indicate very much less voltage. The same number of milliamperes could be obtained with both spark gaps by varying the thickness of the auto condensation pad.

The next consideration would be the high frequency of the current. As a rule apparatus operated by a static machine has a higher frequency than that operated by a coil.

In reply to the fifth question, would say that we make up the apparatus referred to on order. It is essentially an inverted Tesla apparatus, the fine wire being the primary and the heavy wire being the secondary. We only make it up to order, as its construction has to be varied some, according to the apparatus used to excite it.

In regard to Intensifying Screens, would call your attention to our Solace Intensifying Screen, which has an advantage over any other, owing to the fact that the *surface is glossy*, same as a solio print. The advantage of this is that little particles of dirt can be readily removed from the surface, whereas with the Intensifying Screen having a ground-glass like surface, particles of dirt are not easily removed.—Very truly yours, Waite & Bartlett Mfg. Co.

Of Interest to Osteopaths.

Several Osteopathic journals have reprinted the editorial "A Plea for Fair Play" from our January issue with varying comment. The editor of *The Bulletin and Journal of Health* expresses himself concerning it as follows:

"This is a very interesting editorial by Dr. Harrower and we are glad to see that he is trying to be fair even if he does have to indulge in a great amount of verbal gymnastics in order to make his admissions without offending his medical confreres. It takes considerable ingenuity to admit that you believe in Osteopathy and still not come right out with it."

We wrote to Doctor Elfrink (who, by the way, has been a paid subscriber to *PHYSIOLOGIC THERAPEUTICS* since its inception) and for the benefit of others reprint our letter here:

Dr. Walter E. Elfrink,
Chicago, Ill.

My Dear Doctor Elfrink: I have just received from a friend a page torn from the *Bulletin and Journal of Health* for January 15. Thank you for the honor done my journal by reprinting from it the editorial entitled "A Plea for Fair Play."

You would hardly expect me, a regular physician, with a subscription patronage amongst several thousand other regulars, to throw down the gauntlet to them, as many Osteopaths have done, by saying that "Osteopathy is it." I confess that my investigation of the science and practice of Osteopathy leaves me thoroughly convinced of its essential merit, and, at the expense of several subscriptions, I printed the editorial because I believed what was in it.

Without exercising more "ingenuity" and "verbal gymnastics" I will say that I do believe in Osteopathy—as an adjunct to the other methods of treatment. No well-read or intelligent Osteopath would be guilty of saying that in Osteopathy was found a complete system of therapeutics superseding entirely every other therapeutic measure of which we at present have knowledge.

You surely do not think the gastric disturbances may be effectually remedied by skilful manipulation of the corresponding spinal segments, when the matter of dietetic regulation is overlooked; nor will you admit that the therapeutic possibilities of the X-ray can be duplicated by any of the procedures peculiar to the Osteopaths.

This could be extended to considerable length, but I think you see my point. When we admit, in the plainest of plain language, that "the Osteopaths have proved that they can do some things better than they have been done heretofore," what more can you ask? Would you have me say that the Osteopaths can do *all* things better than they have been done before? If so, then I cannot make pleas for fair play for such Osteopaths.

Cordially yours,

HENRY R. HARROWER.

Mechano-Therapeutics and Disease.

TO THE EDITOR:

We have read with great interest the paper of Dr. Bryce entitled "Mechano-Therapy in Disease," and the excellent leading article on the Undeveloped Land of Medicine which appeared in the *British Medical Journal* of September 3rd.

It is greatly to be regretted that the medical profession in this country has largely neglected mechano-therapeutics—a fact well illustrated by the absence of any section in the Royal Society of Medicine and the meetings of the British Medical Association, dealing specially with the subject. Members of the lay public who have heard of Swedish treatment, mechano-therapeutics, massage, or allied forms of treatment, have in consequence come to regard such methods of healing as being outside the domain of the regular medical profession, and have gone to unqualified practitioners to obtain them. Medical men are compelled, as a rule, to send their patients to an unqualified exponent of mechano-therapeutics if they desire to have the latter form of treatment carried out. The inevitable result of this state of affairs is seen in the present large army of unqualified practitioners of

mechano-therapeutics. A small proportion of the latter are doubtless well qualified to carry out such treatment, but on the other hand the vast majority are not, and their presence in reality but exemplifies the old adage that imitation is the sincerest form of flattery.

There is only one remedy. The profession must take mechano-therapeutics into its own hands. The subject should be taught at the universities and medical schools as part of the regular curriculum, instead of being practically neglected as it is now. The treatment of difficult cases should be carried out by the medical attendant personally, or under his immediate personal supervision. Simpler cases might be confided to unqualified practitioners with occasional visits, as the case demanded, from the medical man. But in order to allow the latter alternative to work smoothly, safely, and without abuses, a teaching institute should be provided in which would-be unqualified practitioners of mechano-therapeutics should be thoroughly instructed, both theroretically and practically, in this branch of medicine. The General Medical Council should exercise control over all the diplomates of the institute, and issue a register of their names and addresses on the lines of the *Medical Register*. The diploma of the institute might be granted after examination alone to unqualified practitioners of known repute and standing of some definite number of years.

The need for proper teaching and training in mechano-therapeutics has been recognized abroad, but nowhere more than in Sweden, where the Royal Central Gymnastic Institute, founded in 1813, provides a three years' course (two years in the case of lady students) of Swedish gymnastics; this includes, of course, both medical gymnastics and massage. The institute and its diplomates are under the jurisdiction of the Swedish General Medical Council.

The need of proper legislation and control in the unqualified practice of mechano-therapeutics was never so strong as it is today.—We are, etc.,

EDWARD F. CYRIAX, M. D. Edin.

RICHARD J. CYRIAX, M. R. C. S., L. R. C. P.

London, W., Oct. 17th.

Note.—The above letter was printed in the *British Medical Journal* (Nov. 12, 1910). It is reprinted here for the benefit of many who have written to us regarding the editorial "A Plea for Fair Play," printed on page 259 of the January issue of *PHYSIOLOGIC THERAPEUTICS*.—ED.

If you have a task worth doing,
Do it now!
In delay there's danger brewing,
Do it now!
Don't be a "by-and-byer"
And a sluggish patience-trier;
If there's aught you would acquire,
Do it now!
—Nixon Waterman.

THE EDITOR'S PERSONAL PAGES

This number is a little late. It is no easy matter to produce an index, and we have tried hard to make the index to this first volume of real value; not simply a list of the things that have been given to you during the past year. Please excuse the delay.

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Evidently the last number of *PHYSIOLOGIC THERAPEUTICS* was a "howling success." The only criticism that I have heard has been "you are giving too much for your money." Of course it is very nice to have compliments come in every day. It makes you feel good, especially when an editor coolly informed me that for every compliment you get, either written or spoken, there are at least 100 others who would compliment you if they had an occasion. These good words have made it incumbent upon me to give you even better service in the future, and with your co-operation I will endeavor to do so to the best of my ability.

I confess that it is no easy job to produce this journal, *especially as, up to date, there has been nothing but a deficit to face.* We are hoping that this number may close the era in which we are running behind, and to that end are straining every nerve to make it possible for us to start the second year on a paying basis.

This may be made so much the more sure if each reader will do his share to help, and I am going to send to every reader of this journal three postal cards ready for them to sign and mail to three friends. This will mean quite a bunch of work with little trouble to each one, and with possible immense results.

Will you be willing to lend us three minutes and three cents to do this?

* * * *

By the way, there have been quite a number of orders for the bound volume which will be ready in about three or four weeks. Do you realize that there are *over a thousand* articles, reprinted articles, abstracts, translations, queries and facts relating to this important branch of treatment? One thousand facts, bound in cloth, thoroughly indexed, and delivered to you anywhere for \$2.00! Can you beat it?

Remember that the supply of these volumes is decidedly limited. There are only a few left, and if you want to get a big bargain, send in your order now—that means immediately, right away, quick.

* * * *

I want to call special attention to the foreword to *The Forum*. Next month we want to "start the new year right," and, for this reason, I have chosen as the subject for discussion one which may be of immense help, not only to me personally, but to every reader of the journal—*How Can PHYSIOLOGIC THERAPEUTICS Be Made Better?*

Will you not make a decided effort to give me at least one suggestion, postal card will do, and don't be afraid to say just what you mean?

* * * *

One more little thing before we close this department of this year. I have never been able to circularize physicians in general. I never have had the money to waste on those who were not interested in physiologic therapeutics, so I have depended almost entirely upon the lists of names that were supplied to me by friends. Would you be willing to spend half an hour and select—not copy off from the directory, but select with the proper idea in view—a bunch of names and correct addresses of *those whom you think would be interested* in this journal? Such co-operation would be very much appreciated.

(Continued on page xviii.)





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